GOOD'S

FAMILY FLORA.

GOOD'S

FAMILY

ALBUM.

Hartford, Conn.

Lith of E.C. Kellogg.

Edwin Porter

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THE

FAMILY FLORA

AND

MATERIA MEDICA BOTANICA,

CONTAINING THE

BOTANICAL ANALYSIS, NATURAL HISTORY,

AND

Chemical and Medical Properties and Uses

OF

PLANTS:

ILLUSTRATED BY COLORED ENGRAVINGS

OF ORIGINAL DRAWINGS, COPIED FROM NATURE.

BY

PETER P. GOOD,

EDITOR OF AN IMPROVED EDITION OF THE MEMOIRS OF THE LATE JOHN M. GOOD, M. D., F. R. S., F. R. S. L., MEM. AM. PHIL. SOC., AND F. L. S. OF PHILADELPHIA, &C., &C.

Κατανοήσατε τὰ κρίνα πῶς αὐξάνει, οὐ κοπιᾶ, οὐδὲ νήθει λεγω δὲ νμῖν, ουδὲ Σολομὼν ἐν παση τῃ δοξῃ αυτου περιεβαλετο ως εν τουτων.—JESUS *the* CHRIST.

VOLUME II.

A NEW EDITION, REVISED AND ENLARGED.

ELIZABETHTOWN, N. J.:

PUBLISHED BY THE AUTHOR.

MISSOURI BOTANICAL GARDEN
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COMMENDATIONS

OF

GOOD'S FAMILY FLORA.

It is by no means the intention of the Author, in this advertisement, merely to puff or extol his Work—but simply to call public attention to it. He only asks that persons examine the several numbers of the Family Flora as they come from the press; and then if they do not acknowledge, and are not convinced, that it contains the choicest and most valuable matter as a "Text Book"—notwithstanding it is also a most acceptable and appropriate "Parlor, or Lady's Book"—and withal the cheapest Periodical extant, not being affected by Age or Fashion, but always new, popular and interesting—he does not ask subscription or patronage; for he maintains that all claims to public favor or support must rest solely upon the real merits of the Work, and unless the Work in this respect maintains itself, and commands success, he would prefer abandoning it altogether. As evidence, however, of the opinions of some of our eminent Professors, *who are best able to judge on the subject*, he submits the following communications (in addition to those already presented in the first volume,) taken at random from several correspondents, who have favored him with their kind commendations.

He avails himself also of this opportunity, to tender his most hearty welcome to the new subscribers who are continually coming in, and whose letters contain such flattering notices of the Family Flora. There is room for them and their friends, and no effort shall be spared to make the Family Flora more and more worthy of their high encomiums.

From the Eclectic Medical Journal, Cincinnati, Ohio.

Good's Family Flora and Materia Medica Botanica.—We have carefully perused the Family Flora, which the author, P. P. Good, A. M. of Elizabethtown, New Jersey, has had the kindness to forward to our address. This periodical is printed semi-monthly, but distributed to subscribers quarterly; twelve numbers being bound together in pamphlet form.

It is devoted to the botanical analysis, and medical properties of both indigenous and foreign medical plants.

Each number is embellished with one very superior drawing of some medical plant, which tends greatly to beautify the work.

For neatness and elegance of style, we know of no pamphlet which exceeds this.

The drawings are colored, and true to the living plant, while the natural history, botanical analysis, and chemical and medical properties, together

with the adaptation of the agent to the cure of many diseases, are very accurately, and very systematically presented. No similar production with which we are acquainted, surpasses, if indeed it equals this in the accuracy of its botanical descriptions; the description of the therapeutic virtues of many of the articles noticed, possesses equal merit.

The author appears to be familiar with many of the plants not in use as remedial agents in the allopathic school of medicine, but which are in very common use amongst the Eclectic class of physicians. This speaks well for his liberality, and clearly manifests a disposition to keep up with the improvements of the science.

The work is interesting and instructive, and recommends itself to the notice of every reformer in medicine. L. E. J.

From the New Jersey Medical Reporter, Burlington, N. J.

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Good's Family Flora. This periodical continues to maintain its character for research and ability, and has strong claims on the patronage of a liberal and enlightened public. We think every Family should possess it.—*Bennington State Banner.*

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Good's Family Flora. The March number has arrived. It fully sustains its former reputation, scientific, and well-adapted to the general reader. Its price places it within the reach of all.—*St. Clairsville Gazette.*

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The Work is printed in large octavo form; and each number contains a beautiful colored Plant, with four pages of Letter-press and is perfect and independent.

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The several PARTS are put up for the convenience of subscribers only, and may be forwarded per mail or otherwise wherever desired.

All communications should be addressed (*postage free*) to

PETER P. GOOD, *Elizabethtown, Essex County, N. J.*

The FAMILY FLORA *can only be obtained by application as above,* (post paid,) *with remittance; and which will secure immediate and punctual attention.*

VEGETABLE KINGDOM.

pistils and Stamens visible.

always united in the same flower.

Pistils and Stamens not visible to the naked eye. 24 **Cryptogamia.**

Flowers staminate, pistilate, or perfect on same, or different plants.

S. and P. on two distinct plants. 22 **Dicecia.**

Stamens and pistils on same plant, but distinct flowers.

S. adhering to the Pistil or placed upon it.

Stamens not adhering to the pistil.

by anthers. 19 **Syngenesia.**

by threads

in several dis- 18 **Polydelphia.**
tets aff. at base.

in 2 clusters aff. at base. 17 **Diadelphia.**

in cluster affixed at base. 16 **Monadelphia.**

Not united in the same flower.

adhering among themselves.

Stamens equal among themselves.

20 or more.

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adhering to receptacle. 13 **Polyandria.**

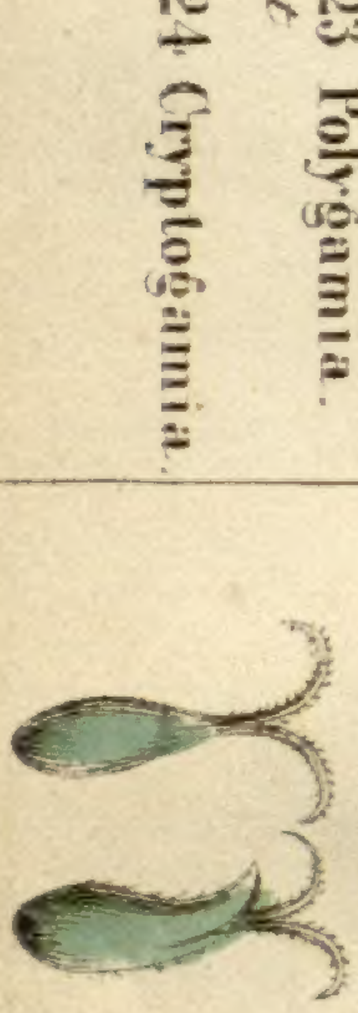
not adhering among themselves.

2 S. shorter than othrs.

4 Stamens of which 2 are longer. 14 **Didynamia.**

6 Stamens 4 longer. 15 **Tetradynamia.**

Number of Stamens. CLASSES.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Lith. of L. C. Kellogg

Hartford Conn

Nº 99.

LINNÆAN CLASSIFICATION.

VEGETABLE KINGDOM.

pistils and Stamens visible.

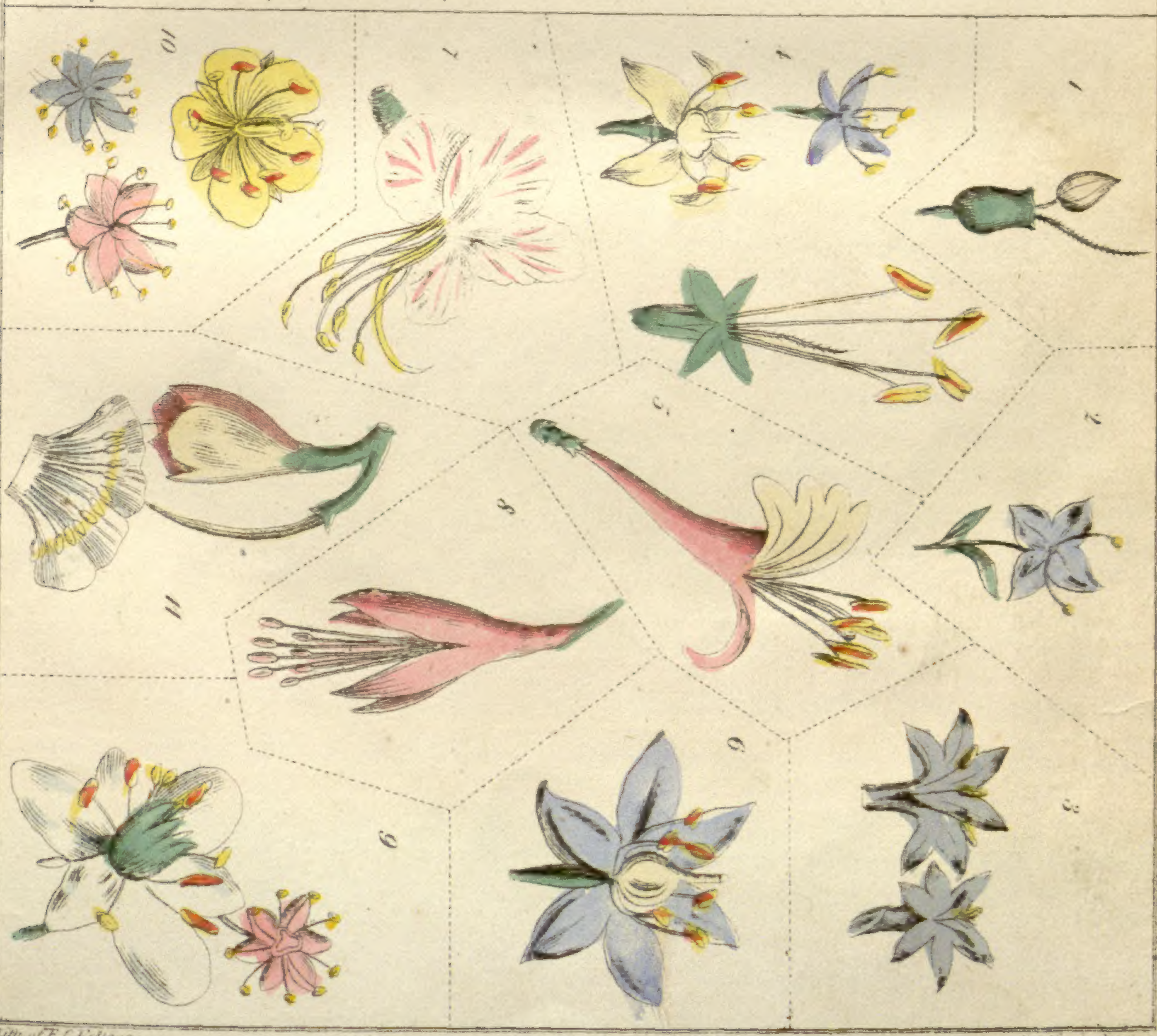
always united in the same flower.

not adhering among themselves.

Stamens equal among themselves.

less than 20 Stamens.

Number of Stamens.	CLASSES.
One 1	Monandria.
Two 2	Diandria.
Three. 3	Triandria.
Four. 4	Tetrandria.
Five. 5	Pentandria.
Six. 6	Hexandria.
Seven. 7	Heptandria.
Eight. 8	Octandria.
Nine. 9	Enneandria.
Ten. 10	Decandria.
from eleven to nineteen. 11	Dodecandria.



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No 100.

LINNÆAN CLASSIFICATION.

INTRODUCTION TO THE STUDY OF BOTANY.

GENERAL PRINCIPLES.

1. The term Botany is properly applicable to the whole of the science, which includes the study and investigation of the vegetable kingdom. Hence the examination of the internal structure of Plants, and of the various processes concerned in their growth and reproduction,—the description of which strictly constitutes but a branch of the science of Botany, and may be designated structural and physiological Botany. But by those who have made the study of the vegetable kingdom a means of interesting recreation, rather than a professed object of pursuit, and even by some who have considered themselves scientific botanists, this branch has been entirely overlooked: and the whole attention has been devoted to the other department of the science, which concerns the arrangement or classification of the many thousand species of Plants existing on the surface of the globe, into groups or divisions; each of which includes a number of species, that have certain characters in common, and that differ from those of other groups. The advantages of such a plan in the saving of time and labor are obvious. If all the peculiarities of every species of plant had to be studied and recollected by themselves, it would require a long acquaintance and a retentive memory, to become master of the characters of the numerous species of flowering plants, which our own country produces; and when this number is multiplied by a hundred, which it probably must be to represent the amount of species existing on the entire globe, it is obvious that no single mind could be capacious enough to grasp the vast amount of detail thus accumulated.

COLLECTION AND ARRANGEMENT OF PLANTS.

2. It is the business of the Botanist, therefore, in the first place, to *collect* plants from all sources open to him; and he then arranges them according to their species. Thus, we will suppose that he has collected all the plants of the Northern United States, and that he has obtained a

corresponding series of plants of the Southern United States. Upon bringing them together, he would find that many species are common to the two places; but that some are peculiar to the Northern United States, others to the Southern United States. If he obtained, in addition a collection of South American plants, he would find that some of the species common to the Northern and Southern United States, are contained in it also; and that some species not known in the Northern United States are common to the Southern United States and South America; but he will find many peculiar to South America. Proceeding thus over the whole world, he would gradually increase his number of new species; at the same time adding considerably to the number of specimens of some which he would find very extensively diffused. He would find a few similar species almost every where,—these being the kinds most capable of adapting themselves to varieties in soil, climate, &c.; whilst on the other hand, he would find many of a very limited distribution,—being restricted to some small extent of country, in which alone they can find the conditions necessary for their growth.

DISTINCTION BETWEEN SPECIES AND VARIETIES.

3. The greatest difficulty in this part of the investigation consists in the discrimination of *species* really distinct,—that is to say, of races which have maintained their distinctive peculiarities, so constantly, that they must be considered as having had originally different stocks,—from those *varieties*, which may often present differences really greater in amount than those which exist between many undoubtedly distinct species, but which all sprung from the same original stock. Thus, for example, a collection of plants from different parts of India, would contain many specimens presenting such marked differences that the inexperienced Botanist would not hesitate to set them down as distinct species; yet to one who has carefully examined the subject, and has made himself acquainted with the variations produced by the differences in soil and climate, so striking in this extensive tract, it becomes apparent that they are all members of the same. There is, too, in many species a remarkable tendency to run into *spontaneous* variations, for which no external influences will account. Thus the seeds of the same individual of the beautiful Fuchsia, now naturalized in our green-houses, and in the open air of the milder parts of the Northern United States, have been known to produce plants, whose flowers differ so much in shape and in the proportional length of the calyx and corolla, that if these had been collected and compared without the knowledge that they had been produced from one plant, they would have been regarded as distinct species, perhaps even (so striking is the difference) as distinct genera. Nearly the same is the case with another South American Plant, now

much cultivated in the Northern United States,—the CALCEOLARIA, or slipper-shaped flower; of which an immense number of varieties, differing widely in the shape, as well as the color of the flower, are now known, almost every horticultural exhibition having a new one; and the beautiful South American AMARYLLIS has a like tendency, of which the gardener has taken similar advantage.

4. Hence in discriminating what are real species from what are simply varieties, the Botanist is treading on very insecure ground, until he has ascertained, for every species, its tendency to run into varieties of form, whether spontaneous or induced by change of external conditions. His greatest difficulty arises from those cases, in which have arisen what are termed *permanent varieties*, which reproduce themselves with the same regularity as do real species. An instance of this in the animal kingdom is that of the different races of men, which are respectively distinguished by marked peculiarities, that are regularly repeated through each generation; so that many naturalists have been inclined to regard them as really distinct species. There is, however, good evidence (independently of the Mosaic History,) to prove that they have all descended from a common stock. Precisely the same is the case in regard to Plants, many races of which even in the Northern United States, are still under discussion amongst Botanists; some maintaining that they are distinct species, and others that they are but varieties. Thus of the Willow, seventy-one species have been stated by one authority to exist, whilst another reduces them to twenty-nine. The genus Rubus or common Bramble, has been thought to contain twenty-one species, which are probably reducible to six or eight. These details are here introduced for the purpose of putting the young Botanist on his guard against the tendency to multiply species, which is now sadly prevalent among many superficial writers, and which is still further encouraged by gardeners, who give new specific names to such varieties as those just alluded to, and even to *hybrids* between these.

COMBINATION OF SPECIES INTO GENERA.

5. When the Botanist has satisfied himself regarding the species which he has collected, his next step is to combine those amongst which he finds the greatest resemblance, into *genera*. Now in this process he must not be altogether influenced by similarity in their general external aspect, for this will often conceal great differences in their most important organs. There are certain parts which furnish *essential* characters, without similarity in which it would be wrong to associate species, however alike in other respects, in the same genus; and, on the other hand, there are parts so susceptible of variation, that the differences between them must be very striking indeed, to warrant the plants being arranged under

different genera, when they agree in what have been termed the essential characters. Thus, for instance, the general outline of the leaf has been stated to be often subject to great variety, in accordance with the degree in which the space between the veins is filled up with fleshy parenchyma; and in most cases, a difference in the outline of the leaves of two plants, the distribution of the veins remaining the same, would not alone serve to cause two plants exhibiting it to rank even as distinct species. But any considerable alteration of the veining would be held sufficient for such a separation; though the two plants, if agreeing in the structure of their organs of fructification, would still be placed in the same genus. On the other hand, a marked and constant difference in the organs of fructification would be rightly held sufficient to place the two species in different genera, even though the form and veining of the leaves might be precisely the same. On the relative value of the characters furnished by the different organs, more will hereafter be stated.

FORMATION OF ORDERS AND CLASSES.

6. Even when thus grouped together into genera, however, the number of objects, which the Botanist has to study, remains by far too great for convenience; and he next forms his genera into *orders*, and combines these orders into *classes*, according to their respective correspondence and difference in certain characters of a still more general nature. Now in this process he may follow two very different plans; and upon these are founded the two systems of classification which are now in vogue. One of these is termed the Linnæan system, after its founder; or the Artificial system, from its character; the other is termed the Natural system. In the Linnæan system, a small number of characters—chiefly the number of stamens and pistils—is taken as the standard; and the whole vegetable kingdom is distributed under classes and orders, according to the correspondences and differences among the several genera in these respects,—no regard whatever being had to any other characters. In the Natural system, *all* the characters of the genera are studied; and those are united into orders, which present the greatest correspondence in the characters that are regarded as of the most importance: on the same principle, the orders are united into classes. If the former plan be followed, genera most widely differing in their structure and physiological characters are often brought together, and others which are nearly allied are frequently separated to a great extent, so that in fact, it is very common to find, that nothing can be stated as true of all the plants included in a Linnæan order, except that they have a similar number of stamens and pistils. On the other hand, in the Natural system, the number of characters in which there is a general agreement among all the plants of a particular

order, is so great that, to say that the plant belongs to a certain order, is at once to give the greater part of its description. This is the case also in the highest or most general groups. For instance, to say that a particular species is an Exogen, is at once to make known the structure of its stem, and the mode of its increase,—to express the important fact that it has two cotyledons or seed-leaves,—to render it most probable that the arrangement of the veins in its leaves is reticulated rather than parallel,—and to intimate that the parts of its flowers are likely to be arranged in fives or fours, rather than in threes.

CONNEXION OF STRUCTURE AND PROPERTIES.

7. There is a point of agreement among the plants brought together in Natural orders, which is of the greatest practical importance. This is that those which agree in structure almost invariably correspond in *properties* also. For instance, the whole of the Papaveraceæ or Poppy tribe possesses narcotic properties; all the Ranuculaceæ or Crowfoot tribe are acrid; whilst all the Malvaceæ or Mallow tribe are destitute of unwholesome properties. Thus, when a plant is recognized as a member of a particular Natural order, an almost certain account may be given of its properties,—whether it is likely to be injurious or wholesome, to furnish valuable medicines or important articles of food. It must be remembered, however, that the peculiar properties of the plant do not pervade every portion of it; and that it may hence be possible to obtain wholesome nutriment, even from members of orders most distinguished for their deleterious properties. Thus the Potato belongs to the order Solaneæ, which contains the Deadly nightshades, Henbane, and other poisonous plants, but the edible part of it, which is a deposition of starch for an express purpose, is free or nearly so, from the narcotic properties which exist in the stems and leaves. Indeed as a general rule, such depositions of starch may supply wholesome food in any order, more especially if care be taken to free them from any juices they may contain: thus the Cassava which furnishes one of the most important articles of food to the inhabitants of many tropical countries, is obtained from a plant of the order *Euphorbiaceæ* or spurge tribe, which is distinguished for its very acrid qualities: and these are restricted to the juice expressed from the meal after it has been ground.

USE OF THE LINNÆAN SYSTEM.

8. The Linnæan system, however, is not without its advantages, for particular purposes. To a person commencing by himself the study of Systematic Botany, desirous of making himself acquainted with the names and characters of the plants he may meet with in his walks, and not ambitious of extending his studies to the higher parts of the science, the

Linnæan system, when applied with the aid of books, possesses facilities which are (at present at least) greatly superior to those afforded by the other, and which are well calculated to encourage a learner. To count the number of stamens and pistils is generally a very easy process; this at once establishes the class and order; and nothing then remains but to determine the genus and species, which (among the number found in the Northern United States) a little practice in the examination of characters will enable any intelligent person to do with the aid of books in which these are laid down. The habit thus gained of discriminating characters, and of applying terms, is a most valuable preparation for the study of the Natural system, when opportunity presents itself. It must be constantly borne in mind, however, that the utmost use which can be made of the Linnæan system, consists in the assistance it affords in the discovery of the name of an unknown plant, and until this has been made out, the previous determination of its class and order gives no indication of its general structure and properties, (not even making it apparent whether it is an Endogen or an Exogen, a Dicotyledon or a Monocotyledon,) since under the same head are grouped genera of the most opposite character. It may be said that it serves a sort of alphabetical index to a book, enabling the reader to turn to any part of it he wishes, by looking out the subject in the order of its first letters, but giving no idea whatever of the general scope of the book, nor of the mode in which its subjects are arranged.

IMPERFECTIONS OF THE LINNÆAN SYSTEM.

9. The Linnæan system is liable to many imperfections and difficulties in its application, even in the limited circle of the plants of the United States; for example, the number of pistils is liable to be altered in any species by the more or less complete adhesion of the carpels; and that of the stamens may also vary in the different species of the same genus, and even among the individuals of the same species, or even (in some instances) among the different flowers of the same stem. The adoption of characters thus liable to vary cannot, therefore, but sometimes lead to confusion. For instance, of the genus Polygonum, of which several species are known by the name of Bistort, Buckwheat, Persicaria, &c., one has always, and two others have occasionally eight stamens, whilst in the rest the number varies from five to ten. As eight seems to be the most regular number, the genus is placed in the class Octandria: and although its styles are sometimes only two in number, it is placed in the order Trigynia, because they are more commonly triple. Now if a student meet with a specimen which has five, six, or ten stamens, he will vainly search for its character among the genera of the Linnæan class to which it would seem to belong: and unless he

happen to consult a book which makes special mention of the genus in these several classes, he will be altogether at fault. Suppose that some more knowing Botanist tells him that his plant is a Polygonum, he will again turn to his book, wondering how he could have overlooked it: but he will find the genus in the class Octandria, in spite of the different number of stamens in the specimen before him, and he will then learn that it is placed in the genus Polygonum on account of its strong general resemblance to other Polygonums, although differing from them in characters which are ordinarily considered as sufficient to establish classes and orders. Again, the greater part of the species of the genus *Rhamnus* (buckthorn) possesses both stamens and pistils in the same flower; but the species most generally known in this country on account of its purgative properties is Dicœcious, the staminiferous flowers being on one plant, and the pistiliferous on another. The student who meets with it therefore would seek for it in the class Dicœcia, where he would be disappointed as before; since, as in most species of flowers are complete, it is placed in the class and order to which the number of its stamens and pistils would refer it.

10. Such exceptional cases occur much more frequently than is commonly supposed. It has been proved that in fourteen divisions of the Linnæan system, there are no less than forty three exceptions,—one quarter of the whole; and that out of two hundred and seventy four genera of the Northern United States, belonging to eighteen Linnæan sections, there are seventy eight exceptions,—rather more than a quarter. These facts are important, both as preparing the student to meet with such difficulties, even in the study of the Linnæan system, which is generally considered so easy of application; and also as showing the imperfection of the system itself, which is of no importance whatever beyond the temporary purpose of facilitating the early studies of the Botanical student. In well arranged descriptions of American plants (such as Wood's Class book of Botany, which may be strongly recommended for this purpose) the most perplexing of these cases are noticed, in such a manner as to prevent the loss of time and labor, in vain attempts at discovering genera in wrong classes or species in wrong genera.

PRINCIPLES OF THE LINNÆAN SYSTEM.

11. In consequence of the advantages of the Linnæan system for a beginner, it is desirable to give an outline of the principles upon which its divisions are founded, which may serve as an introduction to the regular systematic treatises upon the subject. The Phanerogamia or flowering plants are distributed under twenty-three classes, all of which are characterised either by the *number*, or particular arrangement of the stamens. In the first twelve of these, *number* alone is re-

garded. Their names are formed by the combination of the Greek numeral expressing the required number, with the termination *andria*, which has reference to the supposed male office of the stamens in the process of fertilization.

CHARACTERS OF THE LINNÆAN CLASSES.

12. These classes, therefore, stand simply as shown in the figures represented in the two plates prefixed to these volumes, and to which reference is here particularly made.

Class 1. Monandria. *One stamen.* Orders Monogynia and Digynia.

Class II. Diandria. *Two stamens.* Orders Monogynia, Digynia and Trigynia.

Class III. Triandria. *Three stamens.* Orders Monogynia, Digynia and Trigynia.

Class IV. Tetrandria. *Four stamens.* Orders Monogynia, Digynia and Tetragynia.

Class V. Pentandria. *Five stamens.* Orders Monogynia, Digynia, Trigynia, Tetragynia, Pentagynia and Polygynia.

Class VI. Hexandria. *Six stamens.* Orders Monogynia, Digynia, Trigynia and Polygynia.

Class VII. Heptandria. *Seven stamens.* Orders Monogynia, Digynia, Tetragynia and Heptagynia.

Class VIII. Octandria. *Eight stamens.* Orders Monogynia, Digynia, Trigynia and Tetragynia.

Class IX. Enneandria. *Nine stamens.* Orders Monogynia, Trigynia and Hexagynia.

Class X. Decandria. *Ten stamens.* Orders Monogynia, Digynia, Trigynia, Pentagynia and Decagynia.

Class XI. Dodecandria. *Twelve to nineteen stamens.* Orders Monogynia, Digynia, Trigynia, Tetragynia, Pentagynia, Hexagynia and Dodecagynia.

Class XII. Icosandria. *Twenty or more stamens inserted into the calyx.* Orders Monogynia, Di-Pentagynia and Polygynia.

13. To the last mentioned Class, however, another character belongs; for in the next Class, Polyandria, the number of stamens is also twenty or more. They are distinguished by the mode of insertion of the stamens, these appearing to arise from the calyx in the former, and from the disk or receptacle in the latter. This distinction which will hereafter be shown to be important in the Natural system, will be at once understood by comparing a true Rose, Plum, Cherry, or Pear blossom, with a Christmas rose, an Anemone, or a Pæony; when the calyx and carolla of the former are pulled off, they carry the stamens with them;

but they may be entirely removed from the latter, leaving the stamens attached to the disk. These two classes will therefore, appear as in the plate

Class XIII. Polyandria. *Twenty stamens or more inserted into the receptacle.* Orders Monogynia, Digynia, Trigynia, Tetragynia, Pentagynia, and Polygynia.

14. The next two classes are characterized by peculiarities in the proportional length of the stamens, as well as in their number. Those which are *longer* than the rest are said to be *in power*; and the termination *dynamia* is applied to the number of these, in order to designate their peculiarity.

Class XIV. Didynamia. *Four stamens, two longer than the others.* Orders Gymnospermia and Angiospermia.

Class XV. Tetradynamia. *Six stamens, four longer than the others.* Orders Siliquosa, Siliculosa.

15. The three following classes are characterized by the more or less complete Union of the filaments of the stamens into bundles or *brotherhoods;* on account of which the termination *adelphia* is applied to the number of such bundles.

Class XVI. Monadelphia. *Stamens united into a single bundle forming a tube which surrounds the style.* Orders Triandria, Pentandria, Hexandria, Heptandria, Octandria, Decandria, Dodecandria, and Polyandria.

Class XVII. Diadelphia. *Stamens united into two bundles.* Orders Pentandria, Hexandria, Octandria, and Decandria.

Class XVIII. Polyadelphia. *Stamens united into several bundles.* Orders Decandria and Polyandria.

16. In the next class, it is the anthers which form the tube; and the name applied to it, signifies a *growth together.* In the succeeding class, the stamens and pistil grow together; and the name *gynandria* refers to this union of the male organs with the female, the latter being designated by the first syllable, which will presently be seen to be much employed in the description of the orders.

Class XIX. Syngenesia. *Stamens united by their anthers into a tube.* Orders Æqualis, Superflua, Frustranea, and Necessaria.

Class XX. Gynandria. *Stamens and pistils grown together.* Orders Monandria, Diandria, and Hexandria.

17. The three remaining classes are characterized by the separation of the staminiferous and pistilliferous flowers. The import of the name Monœcia is *single-housed*, and of Diœcia *double housed.*

Class XXI. Monœcia. *Stamens and pistils on separate flowers, but both growing on the same plant.* Orders Monandria, Diandria, Triandria, Tetrandria, Pentandria, Hexandria, Octandria, Icosandria, Polyandria, and Monadelphia.

Class XXII. Diœcia. *Stamens and pistils not only on two flowers, but these flowers on two different plants.* Orders Monandria, Diandria, Triandria, Tetrandia, Pentandria, Hexandria, Octandria, Enneandria, Decandria, Dodecandria, Icosandria, Polyandria, and Monadelphia.

Class XXIII. Polygamia. *Stamens and pistils separated in some flowers, united in others, either on the same plant or on two or three different ones.* Orders Monœcia and Diœcia.

CHARACTERS OF LINNÆAN ORDERS.

18. The Orders or sub-divisions of the classes are generally founded upon the number of the styles or (if these be not present) of the stigmas; or upon certain peculiarities of the seed-vessel. In the first thirteen classes the number alone is regarded; and the orders are designated as before, by the Greek numerals, with the termination *gynia* which refers to the supposed female character of the pistil.

Order 1.	Monogynia,	*One style.*
2.	Digynia,	*Two styles.*
3.	Trigynia,	*Three styles.*
4.	Tetragynia,	*Four styles.*
5.	Pentagynia,	*Five styles.*
6.	Hexagynia,	*Six styles.*
7.	Heptagynia,	*Seven styles.*
8.	Octogynia,	*Eight styles.*
9.	Enneagynia,	*Nine styles.*
10.	Decagynia,	*Ten styles.*
11.	Dodecagynia,	*Twelve styles.*
12.	Polygynia,	*More than twelve styles.*

19. It will be evident from the description of the structure of the pistil, that the number of styles affords no indication of the character of the ovarium. Thus, the ovarium may be formed of many carpels, the divisions between which remain as distinct partitions, whilst the styles and stigmata of all these may have coalesced into one pillar; so that we may have a single style with a many-celled seed-vessel. On the other hand, the walls of the carpels may form but incomplete partitions, so that the cavity of the ovarium is undivided; whilst the styles and stigmata may be numerous. The structure of the ovarium itself is however a much less variable character than the number of styles, which is liable to alteration in many species (like that of the stamens) through the adhesion or the non-development of some of them. In the class Didynamia, the characters of the orders are drawn from the structure of the seed-vessel. The first *Gymnospermia*, or naked-seeded, includes those

in which the ovary has four carpels, each enclosing a single seed; and this, when mature fills up the cavity in such a manner, that the wall of the seed-vessel appears like an outer coat to the seeds, which thus do not seem to have any other envelope. The only *true* naked-seeded plants are the CONIFERÆ or *Pine tribe* and its allies, in which the seeds never are enclosed in a seed-vessel. The second Order *Angiospermia*, includes those Didynamia which have a distinct seed-capsule, usually two celled, each cavity containing many seeds. In the next class, TETRADYNAMIA, there are also two orders, distinguished by the form of their pod-like seed-vessel; the first *Siliquosæ*, having a long pod; the second *Siliculosæ* a short one. The Orders of the classes MONADELPHIA, DIADELPHIA, POLYADELPHIA, depend upon the number of their stamens, and they have the same names as the first thirteen classes; the number of stamens, however, being never less than five. The sub-division of the class SYNGENESIA (as now understood) is rather complex; and it is nearly the same in the Natural system. The Orders of the classes GYNANDRIA, MONŒCIA, and DIŒCIA, are distinguished by the number of stamens and are consequently *Monandria*, *Pentandria*, &c. Those of the class POLYGAMIA are the *Monœcia*, in which the same plant bears staminiferous, pistilline, and complete flowers, and the *Diœcia* in which these occur on different individuals.

NATURAL GROUPS IN THE LINNÆAN SYSTEM.

20. There are many of these orders which form groups truly natural; that is, which consist of genera having a large number of points of agreement with each other, independently of the characters in which the sub-division is founded. For example, one portion of the class PENTANDRIA, order *Digynia* corresponds with the Natural order *Umbelliferæ*, (including the parsley, carrot, hemlock, parsnip, &c.;) the class TRIANDRIA, order *Digynia*, very nearly corresponds with the natural group of grasses, all these having three stamens and two styles, which combination is not found in any other plants. The DIDYNAMIA, *Gymnospermia*, again are the same with the Natural order *Labiatæ*, to which belong the various kinds of mint, thyme, dead-nettle, &c.; and the class TETRADYNAMIA corresponds with the Natural order *Cruciferæ*, to which belong the mustard, cress, cabbage, turnip, stock, wall-flower, &c. From the predominance of the number *three* and its multiples in the parts of the flower of Endogens, we find most of this group included in the classes Triandria, Hexandria, and Enneandria; whilst the prevalence of the numbers four and five among Exogens causes the classes Tetrandria and Pentandria, Octandria and Decandria, with Icosandria and Polyandria, to contain a very large proportion of that division. But the Linnæan system often brings together Exogens and

Endogens into close contact; besides breaking up the natural alliances of each, so as to scatter widely apart the members of groups nearly united.

IDEA OF NATURAL ARRANGEMENT.

21. The Natural system, on the other hand aims to present an harmonious and consistent view of the vegetable kingdom, by associating into orders those genera which agree in the most numerous and important characters, and which differ from others in the same. A table of the characters of these orders would therefore resemble the table of contents of a well-arranged book: giving at one glance to a person at all acquainted with the subject, an idea of the mode in which it is treated by the author, and of the relations which the several divisions of it had in his mind; and enabling a person who is entering upon the study of it, to do so with the knowledge that he is not gleaning at random, as if he were reading through a Dictionary, but that every acquisition he makes of an individual part, is something toward an acquaintance with the plan of the whole. One more illustration may set this matter in a still clearer light. The reader may be requested to consider this series of treatises as completed according to the original plan; and as consisting of a number of volumes, each devoted to some particular science, but all having a certain degree of connexion with each other. Each volume consists of a series of chapters, in which the sub-divisions of these sciences are respectively treated of, and among which there is a still closer degree of connexion. Every chapter again, is made up of a number of paragraphs, each intended to contain one or more important facts, the knowledge of which is in itself useful, but which can only be fully understood when read continuously with the preceding and following paragraphs. We shall further suppose that the subject of every paragraph could be concisely expressed by a single word. Now we will imagine these paragraphs all printed on separate slips of paper, with their appropriate titles to be given to a man of science, with a request that he would arrange them for publication. His first idea might perhaps be, to place them in alphabetical order, so as to form a kind of Dictionary; this being the most easy method of fulfilling his task, and also having the advantage when complete, of admitting very easy reference to any required subject. But what idea would the reader of such a volume gain of the plan which the original author had in his mind? Or what connected and harmonious scheme of knowledge could he frame from them, unless he digested and arranged them in his own mind, in the manner in which we shall suppose our man of science to proceed to do? He might commence in two ways:—either by separating the whole into heaps, according to the subjects to which they respectively refer, *e. g.* Mechanics, Chemistry, Geology, Botany,

Zoology, &c., and then arranging these singly; or by endeavoring to join the separate paragraphs together, according to their obvious connection. He will probably find a combination of these two methods the most advantageous; and by a careful examination of each single paragraph in its relations to the whole, he may at last succeed in producing a series of connected treatises, methodically arranged according to their respective subjects, and regularly divided into chapters very nearly or even exactly upon the plan of the original author. Now the alphabetical arrangement would bear a close parallel with the Linnæan system of Botanical classification; whilst the latter distribution,—the one evidently most calculated to convey to the learner a *connected* rather than a *desultory* knowledge of the several objects of his pursuit may not unaptly represent the Natural system.

VALUE OF A NATURAL SYSTEM.

22. It is by seeking for the latter only, that any of those general principles can ever be attained, which give their chief value to the facts of science, and which lead us higher and higher in the contemplation of that almighty Power and boundless Wisdom by which the Universe was framed; for *the* Natural system would be but a table of contents of the vegetable Kingdom, arranged on the plan of its divine Author. In order to attain it, the Botanist requires to become acquainted, not only with all the tribes of vegetables at present existing on the surface of the globe, but with the forms and characters of those which have once existed, since—it cannot be doubted—all these constituted parts of the one general scheme, without the knowledge of which it would be impossible to reconstruct it. Now it is well known to the Botanist, that a very large number of the species of plants with which he is somewhat acquainted, have been so imperfectly examined and described, that their true place in the system cannot be determined; and there is good reason to believe that there are many more of which he is totally ignorant. Here therefore are abundant causes for the imperfection of any natural system which can be at present framed; and should these ever be removed by long continued labor and research, there will yet remain the other causes resulting from the impossibility of becoming fully acquainted with the characters of the races which have existed in former periods of the earth's history, and which have been swept completely from its face. Of these, some remains are occasionally discovered, sufficiently perfect to excite the liveliest interest and curiosity, by showing that races once flourished which fill up many of the wide gaps existing between those with whose characters we are now familiar, and which if we knew more of them, would explain many things that are at present most perplexing.

LINNÆAN NATURAL SYSTEM.

23. Some of the strongest upholders of the Linnæan system are influenced by their veneration for its Author; whose fame, however will rest on a foundation much more durable than this. It is not generally known that the advantages of the Natural method have never been more highly appreciated than they were by Linnæus himself. When he framed an artificial system for the convenient arrangement of plants, it was with the very purpose for which the temporary employment of it has been now recommended,—namely to facilitate that acquaintance with the vegetable Kingdom, which must be gained before a Natural method can be framed. Linnæus himself gave a sketch of the Natural system, explaining the principles upon which it might be expected to rest, and he pronounced the investigation of the natural affinities to be the great object of his studies, and the most important part of the science. He considered the artificial system as a temporary expedient which however necessary at that day, would inevitably give place to the system of nature, so soon as its fundamental principles should be discovered. The elucidation of the latter, he said is the first and ultimate aim of Botanists; to this end the labor of the greatest Botanists should be diligently directed; and the merest fragments of this system should be carefully studied. Though not then fully discovered, he spoke of the pursuit of it as held in high estimation by the wisest Botanists, and as being little encouraged by the less learned. "For a long time," he adds, "I have labored to establish it; I have made many discoveries, but have not been able to perfect it; yet while I live I shall continue to labor for its completion. In the mean time I have published what I have been able to discover; and whosoever shall resolve the few plants which still remain shall be my Magnus Apollo. Those are the greatest Botanists who are able to correct, augment, and perfect this method: which those who are unqualified should not attempt." Those therefore who priding themselves upon their being disciples of Linnæus continue to employ his temporary and artificial system of classification, to the exclusion of one founded upon Natural principles, imagining that they are upheld by his authority, quite mistake the views of their great master, and sadly misrepresent his opinions.

24. The knowledge of the vegetable kingdom obtained by Linnæus, however, was far too small in amount, to enable him to frame a Natural system upon sound principles. The number of species known to him was probably not an eighth part of those with which Botanists are now acquainted; and no arrangement, therefore, could be formed, which was not marked by many wide and unsightly gaps. Further, so little was at that time known of the internal arrangement of the organs of plants, that even the distinction between the two principal forms of structure in the stem,—evident and well marked as it now appears,—was

not then understood. Nevertheless, with that sagacity which so remarkably characterized him, Linnæus succeeded in grouping together genera into orders, which are even now regarded as, for the most part, very natural assemblages; that is, as containing plants really allied to each other in their most important characters, and differing from those of other orders in the same. But of the best mode of arranging these orders he was necessarily ignorant, since the *most* important characters were not then understood. The great progress which has been made since his time, in the structural and physiological departments of Botanical science, has done much to place classification on a more certain basis; yet there is still much wanting before Botanists shall be generally agreed on the principles which shall regulate the division and subdivision of the vegetable kingdom. In the following outline, it has been deemed advisable to adopt the classification of De Candolle, being the one which is most in use at the present time; and the principles upon which it is founded will therefore now be explained.

PRINCIPLES OF NATURAL ARRANGEMENT.

25. It may be remarked, however, in the first place, as a principle common to all systems of classification which profess to be natural, that the different values which are attached to the various characters furnished by the several organs of plants should be estimated by the degree in which they respectively indicate important similarities or differences of *general* conformation. It often happens that attention to one or two characters may afford a considerable amount of knowledge of the whole; because those characters are found to be inseparably connected with others. An instance of this has been already given in regard to the primary division between Exogens and Endogens (§ 6;) and it may be useful to illustrate it further by reference to the animal kingdom. If, for example, we meet with an animal covered with feathers, we at once know a great deal of its internal structure and economy. It is a *vertebrated* animal, possessing a jointed back bone and complete internal skeleton: it has all five senses, its blood is red, it breathes air, its temperature is high, its young are produced from eggs, it walks upon two legs, &c. Here we are at once informed that this unknown animal possesses all the characters peculiar to the class of birds; since no other animals than birds possess a covering of feathers, which is inseparably connected with the whole plan of their structure and economy. In the same manner the classification of the Mammalia, (Quadrupeds) according to their teeth, proposed by Linnæus, proves to be a very natural one, although founded upon a single set of characters; because the form and number of the teeth vary with the nature of the food on which the animal is intended to live; and to make

use of this, a certain form of digestive apparatus is adapted; as well as a certain kind of general structure, furnishing the instruments by which the food is obtained: so that these may be known to a great extent from the inspection of the teeth alone. In like manner, the Botanist, whilst founding his arrangement upon the whole group of characters which each plant exhibits, endeavors to select those, as marks for distinguishing the several divisions, which are at once easily recognized, and which serve as the best key (so to speak) to those which are seated within. Such characters are natural, then, in proportion as they indicate *general* conformity or difference of structure; thus the distribution of the veins of the leaves,—a character easily recognized,—will in general serve to distinguish Exogens and Dicotyledons from Endogens and Monocotyledons; and it is therefore a very natural character, serving as a key to all those which are indicated by these terms. On the other hand, the number of stamens and pistils in a flower is a purely artificial character, since it gives no further certain information of the general structure of the plant.

26. Another general principle of Natural classification must next be pointed out. When a number of Plants or Animals are associated, on account of their general resemblance to each other, into a Natural group, it will be found that the characters in which they agree, are presented by some members of the group much more prominently than by others; and that in some they are occasionally so much wanting, that these can scarcely be regarded as connected with the rest; yet they would not seem to be more easily included in any other groups. Now, those members of a natural group which most strikingly present a union of all the characters by which it is distinguished, are spoken of as its *types;* and those in which these characters are less obvious are termed *aberrant* members of the group. It is by these, in fact, that natural groups are connected with one another; for it will generally be found that in the aberrant members of one group, its characters become (as it were) gradually shaded off, until they almost blend with those of the next. To revert to an illustration; where the countries occupied by two nations are not separated by any marked natural boundary, (as a broad river or high chain of mountains,) the peculiar characters of these nations, which may be regarded as most strongly exhibited in their respective chief towns become gradually blended towards the border where they meet, so that the transition from one to the other is by no means so abrupt, as if the traveller were conveyed at once from the metropolis of each to that of the other. Every natural group then, may be regarded as a sphere, surrounded by other spheres—each representing another group,—which touch it at certain points, the *type* of each will occupy its centre, and the *aberrant* members will be disposed in various posi-

tions around it, in proportion as they lose *its* peculiar characters and approach other groups. For example, the group of Lizards is intermediate between that of Serpents and that of Tortoises. There are some Lizards in which the body and tail are greatly lengthened, whilst the legs are shortened, so that the form of the Snake is approached; and in the common Slow-worm or Blind-worm, the external form is completely that of a snake, whilst beneath the skin two pairs of small though perfectly formed legs may be found on careful examination. This, then, is an *aberrant* form, situated just on the border of both groups, and scarcely having a certain claim to a place in either. On the other side, the Lizards are connected with the Tortoises by a species commonly known under the name of the Allegator-Tortoise, or Snapping-Turtle, which may be considered as a Tortoise with a long Lizard-like neck, legs, and tail, or, as a Lizard with a Turtle-shell on its back. The Lizards are connected, again, with Birds (to which they would not seem to have the slightest possible relation,) by means of a very curious animal not now existing, which had the general structure of the Lizards; but which had the fore-legs converted into wings like those of a bird; and which seems to have been covered with something intermediate between scales and feathers. Many similar instances will present themselves in the study of the vegetable kingdom.

27. Hence when it is stated that a Plant or Animal belongs to a particular group, it is by no means necessarily implied that it possesses *all* the characters which are considered as marking that group. Thus,—to revert to an instance just now employed in illustration,—the structure of the feathers, which are generally so characteristic of the class of Birds, is greatly modified in some of the species which approach nearest to other groups; in the Emu, for example (one of the Ostrich tribe) the feathers are little else than stiff branching hairs; and in the Penguin, those covering the fin-like wings resemble scales. So, again, in the first natural group of plants,—the *Ranunculus* or Crow-foot tribe,—there are some species which have the parts of the flower arranged in *threes* as in Eudogens; yet they are not really such, for their stems are Exogenous, the veining of their leaves is netted, and their embryo is dicotyledonous. Again the common *Arum maculatum* (Cuckow-pint) has reticulated leaves; but it is not an Exogen, because its stem is Eudogenous. and its embryo monocotyledonous. And the pond-weed *(Potamogeton)* has the parts of its flowers arranged in fours; yet it does not belong to Exogens, since its leaves are parallel-veined and its embryo is monocotyledonous.

28. In considering the several characters afforded by the varieties in the structure of Plants, it will be convenient to follow the same order as that which has been adopted in describing that structure. The elementary tissues do not afford any means of distinction, except in regard to

the primary divisions,—the presence of spiral vessels being on the whole characteristic of flowering Plants (which have been hence termed *Vasculares*); and their absence being nearly constant in Cryptogamia (which have been hence termed *Cellulares*.) There are some of the inferior Phanerogamia, however, in which no spiral vessels can be detected; and in the Ferns which stand at the head of the Cryptogamia, modifications of them may be found. However, if on examining any portion of the fabric of an unknown plant, spiral vessels were distinctly seen this might be regarded as sufficiently indicating that the specimen belonged to the higher of these two groups. The peculiarity of the woody fibre in the *Coniferæ* and allied orders, together with the absence of the dotted-ducts or special sap vessels, is characteristic of that portion of the Phanerogamic division; but excepting in this instance, no use can be made of the varieties of the elementary tissues, in defining the subdivisions of the classes of Plants.

29. The structure and mode of increase of the stem afford as already stated, the means of establishing the soundest division of the Phanerogamia: and the two groups of Exogens and Endogens are universally recognized as natural classes. Between these, however, there are several connecting links,—some Exogens exhibiting in their stem no separation into annual layers,—and some Eudogens, presenting an approach to the Exogenous division of the kingdom. One small order *(Calycanthcæ)* is known by the presence of four incomplete centres of vegetation surrounding the principal one; and the Passion-flower tribe is remarkable for having the stem almost cut into four quarters; whilst a square stem is universal in the Dead-nettle tribe. In some orders, such as the *Cacteæ* (Prickly-pear-tribe) and *Euphorbiaceæ* (Spurge tribe), the quantity of cellular tissue usually so much predominates that the stems are soft and succulent; but this is not always the case, some genera having stems of the ordinary character. No very positive characters can in general therefore, be drawn from the structure of the stem, in dividing the classes into sub-classes and orders. Nor do the roots afford any better guide; since the modifications of form of which they are susceptible are very few, and they are by no means constant in particular groups. As a general rule, however, it may be observed that neither bulb nor rhizoma are found in Exogens, and that they are confined to a few orders among Eudogens.

30. The leaves are subject to considerable modifications, both in position, form and structure, which are very useful in classification. The general differences among the leaves of Exogens, Endogens and Acrogens have already been adverted to. The relative position of the leaves, as whether alternate, opposite, or verticillate, is often a very important character, but in regard to this, as well as to other characters, it often

happens that it is of much greater value in some orders than it is in others. Thus in *Lamiaceæ* (Dead-nettles) they are uniformly opposite: so that no plant can belong to the order, in which they are alternate or verticillate. In *Urticaceæ* (the Nettle tribe,) on the other hand, they are constantly alternate; so that no opposite leaved plant can belong to the order. In this manner the common Dead-Nettles and Stinging-Nettles may be at once known from each other. But in many others, one arrangement is prevalent, and yet the other sometimes occurs. The degree of division of the leaves, again is subject to considerable uncertainty in many orders, from causes already mentioned; yet, in others notwithstanding a constant form is maintained; thus, leaves with teeth or jagged edges are never found in the order *Cinchonaceæ* (from which the Peruvian bark is supplied) and they are very rare in Endogens. The particular characters afforded by the veining of leaves are much more constant, than those derived from their form; and it is probable that, as they have only been recently attended to, much assistance will be obtained in classification from an increased knowledge of them. A character which would not at first sight appear of much importance, is afforded by the presence or absence of those little dots in the leaves, which are reservoirs of oily secretions; yet these being connected as it would seem with some important differences in the general economy, are extremely characteristic of certain Natural orders, such as *Myrtaceæ* (the Myrtle tribe,) and *Aurantiaceæ* (the Orange tribe,) serving to distinguish all their members from those of other orders nearly allied to them. In other orders, however, there are some genera with, and others without these pellucid dots. The clear or milky character of the juices of the leaves and stalks, indicating as it does, the absence or presence of certain secretions which are characteristic of particular orders, will often prove of much use in distinguishing their members. At the base of the leaf-stalks are often found little leafy appendages (which are in fact leaves, in an imperfect state of development) termed stipules; the presence or absence of these frequently enables the Botanist to distinguish the plants of two allied orders, of which one possesses them, whilst the other does not, and certain peculiarities in them, are occasionally very characteristic of particular groups.

31. Passing on to the flowers, we first have to notice the characters afforded by the bracts; these are seldom of any use in distinguishing orders, on account of their constant variation within the limits of each; but they are often valuable in separating genera and species. The calyx is used in a variety of ways to distinguish orders, but the characters it affords are far from being of equal or uniform importance throughout. The number of sepals is sometimes a very useful and constant mark of a particular order; thus, in *Cruciferæ*, the Cabbage

and Turnip tribe they are always four, and in *Papaveraceæ*, the Poppy tribe always two; but in many orders it is extremely variable. The equal or differing size of the sepals is another character of great importance in some cases, but not to be regarded in others. Again, the union of the sepals by the adhesion of their edges is a character to which great value may usually be attached; when this adhesion unites all the sepals, the calyx is commonly said to be *monosepalous* (single-sepalled;) but the term *gamosepalous*, expressing the union or adhesion of the sepals is to be preferred. A still more important character is the degree of adhesion of the calyx to the organs it includes. Where it arises immediately from the disk or expanded top of the flower stalk, and where the corolla, stamens and pistil are quite distinct from it, arising by themselves from the disk, the calyx is said to be *inferior* to the ovary, or non-adherent to it. But where the calyx seems to spring from the top of the ovary or seed-vessel, instead of beneath it, it is called *superior;* this conformation is due to the adhesion of the calyx to the wall of the ovarium, so that it forms a tube completely enclosing it, as in the Rose, Apple, &c. In some plants the calyx is altogether absent; and then the general rule is that the corolla is likewise deficient. Such plants are said to be *Achlamydeous*, the essential parts of their flowers being destitute of envelope. In the *Compositæ*, however, which possesses a corolla, the calyx is present in an undeveloped form, constituting the *down* or *pappus*, which surrounds the bottom of the corolla, and is attached to the top of the seed-vessel, as in the Dandelion.

32. In regard to the number and regularity of the parts of the corolla, nearly the same may be said as of the calyx. These characters are valuable in some instances and not in others. The separation or adhesion of the petals, constituting what is commonly known as the polypetalous or monopetalous corolla is often a character of first-rate importance. Still, from the cause formerly mentioned, it is liable to some uncertainty, and ought not on that account therefore to be trusted too implicitly. Sometimes no corolla is to be found, the calyx still being present, and the plant is then said to be *Apetalous* (destitute of petals,) or *Monochlamydeous* (having but one envelope). This is a character, however, on which great reliance cannot be placed, since *apetalous* genera frequently present themselves, in orders which usually possess complete flowers,—an occurrence which is less common amongst monopetalous Exogens, than among those which have separate petals, so that the character is of more value in the former than in the latter.

CHARACTERS OF NATURAL SYSTEM.

33. When our attention is directed to the more essential parts of the flowering system,—the stamens and pistil,—we meet with some char-

acters on which more constant reliance can be placed; but these are not among the most obvious, such as the inexperienced Botanist would first attend to. For example, the number of stamens is a character to which little importance can be attached; since this is liable to vary extremely among the genera of almost every order,—in many cases among the species of the same genus,—not unfrequently also among individuals of the same species,—and even in different flowers on the same plant. Yet there are particular orders, in which the number of stamens is very constant throughout, and is very characteristic of them. The most important characters afforded by the stamens are drawn from their mode of origin from the lower part of the flower. They may arise, like the sepals and petals, from the disk, beneath the ovary; in this case they are said to be *hypogynous* (designating their origin from *beneath* the *female* part of the flower.) But it may happen that the sepals and stamens arise together, (these parts being opposite in a regular flower, whilst the petals alternate with them so as not to prevent their adhesion,) and that they adhere for a part of their length, so that the stamens appear to arise from the calyx, and come away with it when it is detached; in this case or when they adhere in a similar manner to the petals, they are said to be *perigynous*, having their origin *around* the female organ. Lastly, when the calyx embraces the ovarium, it also closely envelopes the stamens which are not freed from it except at the top of the seed-vessel; in this case, the stamens, appearing to arise from the top of the ovarium are said to be *epigynous*, being seated *upon* the female organ. Peculiarities in the mode in which the anthers open to disperse the pollen are sometimes characteristic of particular orders; thus the *Berberry* and *Laurel* tribes have anthers bursting by valves; and the *Heaths* have anthers opening by pores. But such peculiarities are found in other genera, amongst orders which do not possess them, and they must not therefore be implicitly relied on.

34. Of all natural characters, those furnished by the structure of the central parts of the flower are perhaps subject to the fewest exceptions; yet these are not such as are the most evident to the ordinary observer. On the number of styles, as already stated, little reliance can be placed for the establishment of important distinctions, but as it is less liable to vary than is that of the stamens, it may often be useful in the separation of genera. A much more decisive character is afforded by the degree of adhesion among the carpels; when they remain distinct from each other, the ovary is said to be *apocarpous* (carpels apart;) and when they are compactly united, it is termed *syncarpous* (carpels together.) There are few Natural orders in which one or other of these conditions does not prevail, to the entire exclusion of the other; so that plants which bear a strong resemblance in general aspect, but differ in this, may be

at once referred to their proper groups. The *position* of the ovary in respect to the calyx has been already adverted to; this character is generally expressed by the terms *inferior* or *superior* ovary. The presence or absence of partitions in the ovaries is a very important distinction. An ovary may be one-celled, because it consists of but a single carpel; or being *syncarpous*, it may contain an undivided cavity, from the obliteration of the partitions, or dissepiments, originally formed by the walls of the several adhering carpels. In this case the attachment of the ovules, or *placenta*, is either *central*, the ovules being clustered around a central column, or *parietal*, where they are attached to the outer wall. Varieties of structure of this nature are very important in distinguishing orders. A peculiar enlargement of the receptacle which sometimes expands between the bases of the carpels so as to separate them more or less completely as in the Strawberry, is often very characteristic of particular orders. The ripened ovary or fruit exhibits numerous and remarkable differences in its form, substance, and mode of dehiscence (or its manner of bursting when ripe;) but these do not usually receive much attention from Botanists; since although there are a few orders which are charicterized by a particular kind of fruit, most others present numerous varieties among their different genera.

35. Many valuable characters are drawn from the seed, both in its early and mature conditions. The number of ovules—that is to say, whether they are definite or indefinite,—is frequently an important difference; still in some orders, there are genera nearly allied, in one of which the number is definite, whilst it is indefinite in the other. The position of the ovules is more essential than their number;—the chief distinctions are between those which, rising upright from the base of the cavity, are termed *erect;* and those, which hanging from its top, are called *pendulous*. Between these two conditions, however, there are other intermediate ones. Such a difference in the position of the ovules often serves to mark a distinct line of separation between the plants of two groups that are otherwise nearly allied. In the perfect seed, the number of cotyledons is a character of primary importance, for distinguishing the two great classes of Phanerogamia, as already several times stated. Even this, however, is subject to occasional exceptions, for there are Endogenous plants with two cotyledons and some Exogens with only one or even none, whilst again, some Exogens have several. As a means of distinguishing orders the presence or absence of a separate albumen is a character of great value, especially when the embryo bears a very small proportion to it in amount. Where, however the embryo and albumen are nearly equal in size, the character is of less importance; so that it is not uncommon to meet, in the same genera, of which the embryo alone fills the seed, and with others in

which a part is occupied by albumen; whilst in the orders especially characterized by it, there is probably not a single genus in which it is absent. It must be remembered that albumen exists in all seeds at an early period of their formation; and that the subsequent difference will depend upon the degree in which it is absorbed by the embryo.

36. The student who has given attention to the preceding statements, is not unlikely to feel some perplexity, on account of the constant uncertainty which has been stated to attend the value of the several characters that have been enumerated. But as he proceeds further, he will find that this uncertainty is greater in appearance than in reality; and that it necessarily results from the properties of a Natural group, as already described. In dividing the vegetable kingdom in an artificial method, it seems very easy to lay down a small number of characters as the standard; and to bring together, or to separate plants, according to their conformity or variety in these. But, as has been already shown, when we come to apply this plan, numerous difficulties are met with, in consequence of the differences which are of constant occurrence, among plants belonging to the same genus or even to the same species (§ 9;) so that even here the Botanist must be guided by *general* resemblance. Now, although it is quite true that no *single* characters, when traced throughout the vegetable scale, can be relied on, as indicating the natural affinities of plants, yet experienced Botanists have little difficulty in defining each order, by a certain *combination* of characters, which are peculiar to it, and not unfrequently, the plants belonging to one order may be separated from those of all other groups, by some evident and well-marked peculiarity.

DE CANDOLLE'S CLASSIFICATION.

37. On the foregoing principles, the class of Exogens is divided by De Candolle in the following manner:—

The first group consists of those, of which the flowers possess both calyx and corolla, and in which the petals of the latter are distinct, and which are therefore *Polypetalous.* This group is divided into two sub-classes, according to the mode of insertion of the stamens.

Sub-class I. *Thalamiflorœ.* Polypetalous Exogens, in which the stamens arise from the disk,—that is, are *hypogynous.* Sometimes the stamens adhere slightly to the sides of the ovary, but they are never epigynous, nor perigynous. (§ 32.)

Sub-class II. *Calyciflorœ.* Polypetalous Exogens in which the stamens arise from the calyx or corolla,—that is, are *perigynous.*

In the next sub-class, the flowers still possessing both calyx and corolla, have the latter formed of united petals, or are *Monopetalous.*

In this division the position of the stamens is not regarded as a primary character.

Sub-class III. *Corolliflorœ.* Monopetalous Exogens.

In the lowest group, the corolla is always absent, making the flower *Apetalous;* and the calyx is not uniformly present. This character is regarded as sufficiently marking the group.

Sub-class IV. *Monochlamydeœ.* Apetalous Exogens.

The object of this classification is to proceed from what are considered the most perfectly organized Exogens, to those which are least so. Thus all the parts are present and distinct from each other in *Thalamiflorœ;* other things remaining the same, the stamens adhere to the perianth in *Calyciflorœ;* the petals join together in *Corolliflorœ;* and in *Monochlamydeœ* first the corolla disappears, and then, among the most imperfect orders the calyx ceases to be developed.

38. The class of Endogens is not divided by De Candolle into any Sub-classes. It will, however, be convenient to consider their orders as characterized by the completeness or incompleteness of their flowers. The *Complete* Endogens may be again sub-divided into those with a *superior*, and those with an *inferior* ovarium. The orders having *Incomplete* flowers, are separated into those in which a cluster of flowers is inclosed in a single large bract, termed a *Spathe*, which is frequently colored (as in the Arum tribe;) and those in which the perianth of each flower is replaced by scale-like bracts, as in the Grasses.

N° 49

POLOPHYLLUM PELTATUM.

May Apple

MATERIA MEDICA BOTANICA.

BERBERIDACEÆ.

Berberids.

No. 49.

PODOPHYLLUM PELTATUM.

May Apple. *Mandrake, Wild Lemon, Duck's-foot, &c.*

Geog. Position. United States.
Quality. Insipid.
Power. Cathartic, narcotic.
Use. Bilious and intermittent fevers.

BOTANICAL ANALYSIS.

Natural Classification.

Order BERBERIDACEÆ.

Linnæan Classification.

Class XIII. *Polyandria.* Order *Monogynia.*

Authorities.—Lin. Sp. Pl. 722. Willd. Sp. Pl. II. 1141. Pursh. Flor. N. A. I. 366. Lind. Flor. Med. 13. Bigelow, Med. Bot. 23. Barton, Veg. Mat. Med. II. 25. Raf. Med. Flor. II. 59. U. S. Disp. 576. Ec. Disp. U. S. 312. Loud. Encyc. Pl. 460. Ballard and Garrod, Mat. Med. 193. Pereira, Mat. Med. II. 760. Griff. Med. Bot. 115. Carson, Illust. Med. Bot. I. 18. Gray, Bot. Text-Book, 711. Beach, Fam Phys. 666. Howard, Bot. Med. II. 280. Kost, Mat. Med. 158. Henry, Med. Herb. 188. Wood, Class-Book, 152.

Genus PODOPHYLLUM.

From the Greek *πούς, foot*, and *φύλλον, leaf*, in allusion to the long, firm petioles on which the leaves are placed, resembling the webbed feet of aquatic birds.

Synonymes.—Podophylle de peltate (Fr.), Schildblattriger Entenfuss (Ger.), Entenruss, Fluss blatt (Dutch).

The Essential Characters.

Calyx. *Sepals* three – four – six, imbricate in two rows, often reinforced by petaloid scales.
Corolla. Hypogynous. *Petals* one to three times as many as the sepals, and opposite to them.

STAMENS. As many or twice as many as the petals, and opposite to them. *Anthers* generally opening by recurved valves, extrorse.

OVARY. One-celled, solitary, simple. *Style* often lateral. *Stigma* often lateral or peltate.

FRUIT. Berried or capsular.

SEEDS. One or few, attached to the bottom of the cell, or many, attached to lateral placentæ.

THE SECONDARY CHARACTERS.

PODOPHYLLUM. *Calyx* of three sepals, caducous. *Corolla* six – nine-petalled. *Stamens* numerous, with linear anthers. *Berry* one-celled, crowned with the single stigma.

Calyx three-leaved, minute. *Corolla* five-to-nine-petalled. *Stigma* large, crenate, sessile. *Berry* one-celled, crowned with the stigma, large, many-seeded. *Columella* one-sided.

THE SPECIFIC CHARACTERS.

PODOPHYLLUM PELTATUM. *Leaves* peltate, lobed. *Flowers* one. *Stem* round, sheathed at base, erect, dividing into two round leaf-stalks, between which grows the flower.

Stem terminated with two peltate polinate leaves. *Flowers* single, inserted in the fork formed by the petioles of the leaves. Sometimes the plant is three-leaved, and sometimes the flower is inserted on the side of one of the petioles.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens* twenty or more arising from the receptacle (hypogynous). ORDER MONOGYNIA. *Ovary* simple. *Calyx* three-sepalled. *Leaves* often peltate. *Flower* solitary.

NATURAL HISTORY.

The MAY APPLE is among our more curious and interesting plants. It is indigenous, herbaceous, and the only species belonging to the genus. The plant is extensively diffused throughout the United States, and especially common in Western New York. It is, however, everywhere found in abundance, on congenial soils, from the State of Maine to the Mexican Gulf, and from the Atlantic seacoast to the Oregon mountains. It grows luxuriantly in moist, shady woods, and in low marshy grounds. It is propagated by its creeping root, and is often found in large patches. The flowers appear about the end of May and beginning of June, and the fruit

ripens in the latter part of September, at which time the leaves wither and fall off. The fruit is edible, and though very agreeable to some persons, it is to others extremely unpleasant. The leaves are poisonous, and its medical virtues are wholly confined to the root, which is said to be most efficient when collected after the falling of the leaves.

The root (*rhizoma*) of the PODOPHYLLUM PELTATUM is perennial, creeping, usually several feet in length, about one quarter of an inch thick, of a brown color externally, smooth-jointed and furnished with radicles at the joints. The stem is about a foot high, round, sheathed at base, erect, dividing into two round leaf-stalks, between which grows the flower. Each petiole bears a large smooth peltate palmate leaf, deeply divided into five – seven lobes, which are each two-parted and dentate at the end. They are often peltate, but generally separate at base quite to the petiole. The flower is stalked, drooping or nodding, white, with a three-leaved, caducous calyx, which is oval, obtuse, concave, and deciduous. The corolla is of about six petals, often more, which are obovate, concave, white, fragrant and curiously reticulated with veins. The stamens are from thirteen to twenty, shorter than the petals, with oblong yellow anthers of twice the length of the filaments. The stigma is sessile, and rendered irregular on its surface by numerous folds or convolutions. The fruit is about the size of a plum, crowned with the persistent stigma, and containing a sweetish fleshy pulp, in which about twelve ovate seeds are imbedded. It ripens early, and when ripe it is of a yellowish color, diversified by round brownish spots.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

PODOPHYLLUM has been examined with a view to determine its constituents, and it has been found to contain resin, starch, and a peculiar vegetable substance crystallizable in white silky tufts. There has also been obtained from it a peculiar principle to which the name of *Podophyllin* has been given. It is in pale, brown, shining scales, unalterable in the air, very sparingly soluble in cold water, much more soluble in boiling water, soluble also in ether, and freely so in boiling alcohol. It has neither acid nor alkaline properties. Nitric acid dissolves it with effervescence, producing a rich, deep-red color. Its taste at first is not very decided, in consequence of its sparing solubility, but becomes at length very bitter and permanent, and its alcoholic solution is intensely bitter. It may be ob-

tained by boiling the root with quicklime in water, straining the decoction, precipitating the lime with sulphate of zinc, evaporating the clear solution to the consistence of an extract, treating this with cold alcohol of 0.817, filtering and evaporating the alcoholic solution, and treating the residue with boiling distilled water, which deposits the bitter principle on cooling.

The dried root is in pieces about two lines in thickness, with swelling, broad, flattened joints at short intervals. It is much wrinkled lengthwise, is yellowish or reddish-brown externally, and furnished with fibres of a similar but somewhat paler color. The fracture is short and irregular, and the internal color is whitish. The powder is light yellowish-gray, resembling that of jalap. The root in its aggregate state is nearly inodorous, but in powder has a sweetish and not unpleasant smell. The taste is at first sweetish, afterwards bitter, muceous, and slightly acrid. The decoction and tincture are bitter.

The PODOPHYLLUM PELTATUM is always considered an active and certain cathartic, producing copious liquid discharges without much griping or other unpleasant effects. It has a peculiar effect upon all the secretions and excretions, stimulating them to a healthy action, and often answers the purpose of removing obstructions without any bad effects whatever. In some cases it has given rise to nausea and even vomiting, but the same result is occasionally experienced from every active cathartic. In its action upon the bowels its operation resembles that of jalap, but it is rather slower, and by some it is supposed to be more drastic. It extends its influence through every part of the system, touching every gland when given in small doses and repeated every two or three hours, while large doses evacuate and exhaust the system.

The cases to which MAY APPLE is particularly adapted are of an inflammatory character, especially at the commencement, where brisk purging is required. It is very highly spoken of by many eminent writers, who have tested its efficacy, and they recommend its employment in bilious fever and hepatic congestions. For these purposes it has been much used in various parts of the country, and with the most happy effects. In dropsical affections, and in rheumatic and scrofulous complaints, the supertartrate of potassa is a useful addition, by which the action of both is reciprocally improved. It is employed as a vermifuge in teaspoonful doses, and repeated.

Some physicians recommend the powdered root as an escharotic to cleanse foul and ill-conditioned ulcers, and dispose them to heal, and to promote the exfoliation or removal of carious or rotten bones. The powder should be sprinkled on the affected part once in from two to five days. It is also said to destroy proud-flesh without any injury to the sound parts.

N° 50.

DAPHNE MEZEREUM.

Mezereon.

THYMELACEÆ.

Daphnads.

No. 50.

DAPHNE MEZEREUM.

MEZEREON. *Spurge Olive.*

Geog. Position. Europe.
Quality. Sweetish, acrid.
Power. Stimulant, diaphoretic.
Use. Chronic cutaneous diseases, rheumatism.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER THYMELACEÆ.

Linnæan Classification.

CLASS VIII. *Octandria.* ORDER *Monogynia.*

AUTHORITIES. — Lin. Sp. Pl. 509. Willd. Sp. Pl. II. 415. Woodv. Med. Bot. 23. Lind. Flor. Med. 324. Whitlaw, Med. Disc. 70. Lond. Disp. 322. U. S. Disp. 478. Ec. Disp. U. S. 155. Loud. Encyc. Pl. 322. Ballard and Garrod, Mat. Med. 366. Thomson, Mat. Med. 796, *95. Pereira, Mat. Med. II. 268. Griff. Med. Bot. 560. Carson, Illust. Med. Bot. II. 26. Gray, Bot. Text-Book, 865. Wood, Class-Book, 481.

GENUS DAPHNE.

The Greek name of the Laurel, for the nymph Daphne, who, it is said, was changed into a laurel, which some species of this genus resemble.

SYNONYMES. — Laureole gentille (Fr.), Kellerhals (Ger.), Mezereo (It.), Mezereon (Sp.), Pepperbompje (Dutch), Tibast (Swed.), Kielderhals (Dan.), Wyleze lyko (Pol.), Mezerao (Port.).

THE ESSENTIAL CHARACTERS.

CALYX. Free, tubular, colored, limb four- (rarely five-) cleft, imbricated in æstivation.

STAMENS. Definite, inserted into the calyx and opposite to its lobes when equal to them in number, often twice as many.

OVARY. Solitary, with one ovule. *Style* one. *Stigma* undivided.

FRUIT. Hard, dry, drupaceous. *Albumen* wanting or thin.

The Secondary Characters.

Daphne. *Calyx* four-cleft, marcescent. *Limb* spreading. *Stamens* eight, included in calyx-tube. *Style* one. *Drupe* one-seeded.

Calyx wanting. *Corolla* four-cleft, withering, including the stamens. *Drupe* one-seeded.

The Specific Characters.

Daphne Mezereum. *Leaves* deciduous, lanceolate, in terminal tufts, entire, sessile. *Flowers* sessile, about three from each lateral bud. *Calyx* hypocrateriform. *Segments* ovate, spreading. *Stamens* inserted in two rows near the top of the tube. *Filament* very short. *Stigma* sessile.

Flowers sessile, cauline, in threes. *Leaves* lanceolate.

The Artificial Characters.

Class Octandria. *Stamens* eight. Order Monogynia. Apetalous. *Ovary* superior. *Fruit* a one-seeded drupe. *Shrubs* with a very tenacious bark, alternate or opposite *Leaves* entire. *Flowers* perfect.

NATURAL HISTORY.

Mezereon grows wild in England and in many parts of the North of Europe, but for medical use and as an ornamental shrub it is cultivated in gardens. It is mentioned by Linnæus as a characteristic of the genus, to which the plant under consideration belongs, that the terminating buds of the shoots produce leaves, and the lateral ones flowers. This affords a hint to the cultivator to be sparing of his knife. It flowers very early in the season, before the appearance of the leaves. It is an old inhabitant of the shrubbery, and deservedly much admired for its precocity and fragrance. It thrives well in loamy soil, and will grow in the shade, and even under the drip of other trees. It is a native of all parts of Europe, from Lapland to Sicily, but was first received from Elbing before it was observed to be a native. The roots of Mezereon are large in proportion to the branches, and have more the character of the fusiform or ramose roots of a herbaceous than of a ligneous vegetable.

The plant is hardy, seldom exceeding four feet in height, with a strong, woody, branching stem covered with a smooth gray cuticle, and a tough fibrous inner bark. The root is of

a fibrous texture, pale-colored, with a smooth olive-colored bark. The leaves, which are protruded from the extremities of the branches, are tender, pale green, deciduous, lanceolate, sessile, entire and smooth. The flowers are of a pale rose-color, odorous, surrounding the twigs in clusters, below where the leaves are sent off, they are sessile, two, three, and four clustered, with deciduous bracts at the base of each cluster, monopetalous, tubular, and the lip divided into four ovate spreading segments. The stamens are alternately shorter, the four higher ones displaying their colored anthers at the mouth of the tube. The germen is oval, supporting a flattish stigma on a very short style. The fruit is a red pulpy drupe, containing one round seed.

There are several varieties of this genus with different colored flowers and fruit, pink-colored in one variety, red in another, white in a third, clothing nearly the whole plant.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The inner bark of every part of this plant when fresh, is very acrid, capable of producing inflammation, vesication, and a discharge of serum when applied to the skin, and when chewed excites a considerable heat of the mouth and fauces, which continues for many hours afterwards. The fruit is equally acrid, acting as a corrosive poison, not only to man, but to many quadrupeds, if eaten in large quantities.

For medical purposes, the bark of the root is directed to be used. The roots are dug up in the autumn, after the leaves are fallen. The cuticle of the dried root is corrugated and of a brown color, the inner bark has a white, cotton-like appearance. As they are imported from Germany and found in the stores, they are derived from the stem and branches, and are long strips folded in bundles of a grayish or reddish-brown color externally, under which, on the removal of the epidermis, it is greenish, and internally white and fibrous. The taste is at first somewhat sweetish, but soon becomes very acrid and unpleasant; in a fresh state the smell is nauseous, but when dried it is inodorous, although it retains its acrimony. The topical action of Mezereon bark is that of an irritant, and when the bark has been applied to the skin, vesicant. It has been recommended as a popular application for the tooth-ache.

From the result of the chemical analysis of the DAPHNE MEZEREUM, by several eminent chemists, it appears to contain an acrid resin, and a peculiar crystalline principle discovered

by Vanquelin, to which he gave the name of *Daphnin*. By digesting the bark in alcohol, then evaporating the liquid to separate the resin, and diluting the residual fluid with water, filtering and adding acetate of lead, he obtained a copious yellow precipitate, which, when freed from the lead by means of sulphuretted hydrogen gas, he found this vegetable principle, *sui generis*. It is colorless and transparent, crystallizes in aggregated prisms, is very soluble in water, alcohol, or ether, is inodorous and of an acrid taste. It is considered analogous to asparagin, and that when pure it has very slight powers. It is not the active principle of Mezereon.

The *acrid resin* is obtained by boiling the bark in alcohol; when the solution cools, some wax is deposited. The supernatant liquor is to be evaporated, and the residual extract washed with water. The resin then left behind is dark green, and soluble in both alcohol and ether. To this substance Mezereon owes its acridity. There is, however, some reason to suspect that this resin is itself a compound of two principles, viz. an acrid vesicating fixed oil, and another substance. The resin is rendered soluble in water by means of the other constituents of the bark. There are, in addition to those already enumerated, wax, *a trace of* volatile oil, yellow coloring principle, uncrystallizable but fermentable sugar, nitrogenous gummy matter, reddish-brown extractive, woody fibre, free malic acid and malates of potash, lime, and magnesia.

Daphne Mezereum operates as a stimulating diaphoretic, increasing the general arterial action, and determining powerfully to the surface; but it is apt to occasion vomiting and purging. It has long been externally employed as a stimulus to ill-conditioned ulcers, and the recent bark, macerated in vinegar and applied to the skin, is recommended in chronic cases of a local nature; under certain management it produces a serious discharge without blistering, and is thus rendered useful by answering the purpose of what is called a perpetual blister, while it occasions less pain and inconvenience. To form the issue, the bark must be renewed every night and morning, and afterwards once in twenty-four hours, to keep open the drain. It has been employed successfully as a local stimulant in a case of difficulty of swallowing occasioned by paralysis. Though the case was of three years' standing, the patient recovered the power of swallowing in about a month, by very frequently chewing thin slices of the root. For this purpose, it should be sliced longitudinally, as the acrimony resides in the bark only, the woody fibre being nearly inert. Internally a decoction of this bark has been used against chronic rheumatism, scrofulous swellings, lepra, and some other cutaneous diseases.

The branches make a good yellow dye.

No 51.

EUPATORIUM PERFOLIATUM.

Throughwort Boneset.

COMPOSITÆ.

Asterworts.

No. 51.

EUPATORIUM PERFOLIATUM.

BONESET. *Thoroughwort, Feverwort, &c.*

Geog. Position. United States.
Quality. Bitter.
Power. Sudorific, tonic.
Use. Dyspepsia, catarrhal affections, fevers.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER COMPOSITÆ.

Linnæan Classification.

CLASS XIX. *Syngenesia.* ORDER *Polygamia Æqualis.*

AUTHORITIES.— Lin. Sp. Pl. 1174. Willd. Sp. Pl. III. 1761. Pursh. Flor. N. A. II. 516. Lind. Flor. Med. 451. Bigelow, Med. Bot. I. 33. Barton, Veg. Mat. Med. II. 125. Raf. Med. Flor. I. 174. U. S. Disp. 326. Ec. Disp. U. S. 170. Loud. Encyc. Pl. 608. Ballard and Garrod, Mat. Med. 315. Thomson, Mat. Med. *108. Pereira. Mat. Med. II. 399. Griff. Med. Bot. 390. Gray, Bot. Text-Book, 811. Beach, Fam. Ph. 655. Howard, Bot. Med. 247. Kost, Mat. Med. 200. Henry, Med. Herb. 55. Wood, Class-Book, 316.

GENUS EUPATORIUM.

Named in honor of Mithridates Eupator, king of Pontus, who first used it in medicine. The properties of the Asiatic or European species were made known by him. *Pliny.*

SYNONYMES.— Eupatoire perfoliée (Fr.), Durchwachsener Wasserdost (Ger.).

THE ESSENTIAL CHARACTERS.

CALYX. Closely adherent to the ovary, the limb wanting, or membranaceous and divided into paleæ, bristles, hairs, &c., called *pappus*.

COROLLA. Superior, consisting of five united petals, either ligulate or tubular.

STAMENS. Five, alternate with the lobes of the corolla. *Anthers* cohering into a cylinder.

OVARY. Inferior, one-celled, one-ovuled. *Style* two-cleft, the inner margins of the branches occupied by the stigmas.

FRUIT. An achenium, dry, indehiscent, one-seeded, crowned with the pappus.

Flowers collected into a dense head (*capitum*), upon a common receptacle, surrounded by an involucre of many bracts (*scales*).

THE SECONDARY CHARACTERS.

EUPATORIUM. *Flowers* all tubular. *Involucre* imbricate, oblong. *Style* much exserted, deeply cleft. *Receptacle* naked, flat. *Pappus* simple, scabrous.

Involucre imbricated (rarely simple), oblong. *Style* long, cloven half way down. *Egret* pilose, scabrous, or rough papillose. *Receptacle* naked. *Akenes* smooth and glandular, five-striate.

THE SPECIFIC CHARACTERS.

EUPATORIUM PERFOLIATUM. *Leaves* connate-perfoliate, pubescent. *Stem* rough and hairy, round. *Involucre* about twelve-flowered.

Leaves connate-perfoliate, oblong-serrate, rugose, downy beneath. *Stem* villose.

THE ARTIFICIAL CHARACTERS.

CLASS SYNGENESIA. *Stamens* five, cohering by the tips of their anthers. ORDER POLYGAMIA ÆQUALIS. Herbaceous plants. *Flowers* or *florets* collected into dense heads (compound flowers). *Corollas* monopetalous, of various forms.

NATURAL HISTORY.

The BONESET, or, as it is sometimes called, *Thoroughwort*, is a common, well-known plant of low grounds, meadows, the banks of streams, and other moist places, growing generally in bunches, and abounding in almost all parts of the United States. It flowers from the middle of summer to the latter end of October, and is always easily distinguished by the leaves being pierced by the stem. The root of the plant is perennial, horizontal, and crooked, sending up numerous herbaceous stems, which are erect, round, rough and hairy, from one to three feet high, simple below and trichotomously branched near the summit, and of a grayish-green color. The character of the leaves is peculiar, and serves to distinguish the species at the first glance. They may be considered either as perforated by the stem, *perfoliate*, or as consisting each of two leaves united at the base, *connate*. Considered in the latter point of view, they are opposite, and in pairs which

decussate each other at regular distances upon the stem; in other words, the direction of each pair is at right angles with that of the pair immediately above or beneath it. They are narrow in proportion to their length, broadest at the base where they coalesce, gradually tapering to a point, serrate, much wrinkled, paler on the inside than the upper surface, and beset with whitish hairs which give them the same color as the stalks. The uppermost pairs are sessile, not joined at the base. The flowers are white, numerous, supported on hairy peduncles in dense, depressed, terminal corymbs, which form a flattened summit to the plant. The calyx, which is cylindrical, and composed of imbricated, lanceolate, hairy scales, incloses from twelve to fifteen tubular florets, having their border divided into five spreading segments. The anthers are five in number, black, and united into a tube, through which the bifid filiform style projects above the flower. The seeds are black, prismatic, acute at base, on a naked receptacle. The pappus has scabrous hairs.

This plant appears to have been known and held in much estimation by the Aborigines of America. The first European settlers of this continent derived their knowledge of its virtues from them, and it became a favorite and universal remedy in domestic practice long before it attracted the attention of the profession. It received the name of *Boneset* from the fact of its having been employed in a painful disease called *break-bone fever*, and in New England it is called *Joepye*, from an Indian of that name who cured typhus with it by a copious perspiration.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

No accurate analysis of the EUPATORIUM PERFOLIATUM has been made since the recent improvements in vegetable chemistry. An examination of it some years since, by Dr. Bigelow, showed that the leaves and flowers abound in a bitter extractive matter, and which is probably the active principle. It is soluble in water and alcohol, and forms copious precipitates with the metallic salts. It has a faint agreeable odor, and a strongly bitter and somewhat peculiar taste. Rafinesque speaks of a peculiar substance in it which he calls *Eupatorine*, and says it is brown, bitter, resiniform, soluble in water and alcohol, forming sulphates, nitrates, &c.

All parts of the plant are used, but the herb only is officinal. It is sudorific, tonic, and diaphoretic. In large doses,

emetic and aperient. It is generally found in the stores in packages put up by the Shakers at Lebanon, N. Y. These packages contain the leaves and flowers, and when not deteriorated by damp are a good mode of preparing the article. Some difference of opinion has existed as to which part of the plant is most efficient. From various experiments it has been thought that the leaves were the most active, but more extended observations have shown that the flowers and small branches are equally useful.

The medical properties of EUPATORIUM PERFOLIATUM are various and important. It is employed to fulfil a number of indications, being given as a tonic, a diaphoretic, or an emetic, as the circumstances of the case require. Besides these, many other properties have been attributed to it, and though it is certainly a highly important remedy when properly administered, it cannot be endowed with all the remarkable and numerous powers that have been attributed to it.

As a tonic, it is deserving of high commendation, and is well suited to those cases of dyspepsia, general debility, and want of tone in the system, requiring the exhibition of the simple bitters. With a view to its tonic effects it is best administered in substance or in cold infusion, and is a mild and agreeable bitter. The dose of the powder is twenty or thirty grains, that of the infusion one or two fluid ounces frequently repeated.

As a diaphoretic, there is ample proof of its powers, particularly in catarrhal affections and inflammatory rheumatism, given in warm infusion so as to produce copious perspiration or vomiting. In the commencement of catarrh it will frequently arrest that complaint. In various forms of fever, particularly remittent and typhoid fevers, it is highly esteemed, and proved beneficial by the testimony of many distinguished practitioners. In yellow fever it is also said to have been productive of very great advantage. With a view to its diaphoretic operation, the infusion should be administered warm, in large draughts, and the patient remain covered in bed.

As an emetic, it is also well deserving of notice. It is given in warm decoction, and may be employed for this purpose as a substitute for the infusion of camomile. It is considered valuable in the early stage of autumnal fevers. In large doses it is said to act on the bowels, and it has long been esteemed as an efficacious remedy in bilious colic accompanied by obstinate constipation, in the dose of a teacupful every half hour until a cathartic effect is produced.

Two other native species are officinal in the U. S. Pharmacopœia. The EUPATORIUM PURPUREUM, and the EUPATORIUM TEUCRIFOLIUM. They do not, however, appear to possess any powers differing from the EUPATORIUM PERFOLIATUM.

№ 52.

ASARUM CANADENSE.

Canada Snake root Wild Ginger.

ARISTOLOCHIACEÆ.

Birthworts.

No. 52.

ASARUM CANADENSE.

CANADA SNAKEROOT. *Wild Ginger, Coltsfoot, Asarabacca.*

Geog. Position. United States.
Quality. Aromatic, slightly bitter.
Power. Tonic, diaphoretic, expectorant.
Use. Colic, whooping-cough, and as an errhine.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER ARISTOLOCHIACEÆ.

Linnæan Classification.

CLASS XX. *Gynandria.* ORDER *Decandria.*

AUTHORITIES.—Lin. Sp. Pl. 633. Willd. Sp. Pl. II. 838. Bigelow, Med. Bot. I. 150. Barton, Veg. Mat. Med. II. 85. Raf. Med. Flor. I. 70. Whitlaw, Med. Disc. 87. Lond. Disp. 205. U. S. Disp. 123. Ec. Disp. U. S. 82. Loud. Encyc. Pl. 392. Ballard and Garrod, Mat. Med. 376. Thomson, Mat. Med. 779, *97. Pereira, Mat. Med. II. 244. Griff. Med. Bot. 527. Gray, Bot. Text-Book, 858. Beach, Fam Phys. 644. Howard, Bot. Med. II. 224. Kost, Mat. Med. 257. Wood, Class-Book, 465.

GENUS ASARUM.

An ancient name, supposed to have been formed from *α* privative, and *σειρά*, *bandage*, because it was not used in garlands, of which the ancients were so fond.

SYNONYMES.—L'asaret (Fr.), Die Haselwurz (Ger.), Mansoir (Dutch), Asaro (It.), Asaro (Sp.), Wodolei (Russ.), Kopytriuk (Pol.).

THE ESSENTIAL CHARACTERS.

CALYX. *Tube* adherent to the ovary. *Segments* three, valvate in æstivation.
STAMENS. Six–twelve, epigynous, or adhering to the base of the short and thick styles.
OVARY. Three–six-celled. *Stigmas* radiate, as many as the cells of the ovary.

FRUIT. Capsule or berry, three – six-celled, many-seeded.
Embryo minute, in the base of fleshy albumen.
SEEDS. Numerous.

THE SECONDARY CHARACTERS.

ASARUM. *Calyx* campanulate. *Stamens* twelve, placed upon the ovary. *Anthers* adnate to the middle of the filaments. *Style* very short. *Stigma* six-rayed. *Capsule* six-celled, crowned with the calyx.

Calyx somewhat bell-form, three or four-cleft, superior. *Corolla* wanting. *Anthers* proceeding from the middle of the filaments. *Stigma* six-cleft. *Capsule* coriaceous, six-celled, crowned with the calyx.

THE SPECIFIC CHARACTERS.

ASARUM CANADENSE. *Leaves* two, broad, reniform. *Calyx* woolly, deeply three-cleft, the segments reflected.

Calyx woolly, deeply three-parted, divisions sub-lanceolate, reflected. *Leaves* broad, kidney-form, in pairs.

THE ARTIFICIAL CHARACTERS.

CLASS GYNANDRIA or DODECANDRIA. *Stamens* and *style* consolidated. ORDER DECANDRIA. Exogens. Herbs or shrubs. *Flowers* greenish. *Stamens* six to twelve. *Stigmas* radiate.

NATURAL HISTORY.

CANADA SNAKEROOT, or Wild Ginger, is an indigenous small and acaulescent plant, inhabiting woods and shady places from Canada to Carolina and Missouri. It is most abundant in hills, valleys, and rich alluvions. It flowers from the last of April to the beginning of June, and is of easy propagation and culture.

The species of ASARUM under consideration very closely resembles the *Asarum Europæum*, in appearance and botanical character. It has a long, creeping, jointed, fleshy, yellowish root or rhizoma, furnished with radicles of a similar color. The stem is very short, dividing, before it emerges from the ground, into two long, round, hairy leaf-stalks, each of which bears a broad, kidney-shaped leaf, pubescent on both surfaces, of a rich, shining light-green above, veined and pale or bluish beneath. A single flower stands in the fork of the stem, upon a hairy pendulous peduncle. The flower is often concealed by the loose soil, or decayed vegetable matter, so that the

leaves with their petioles are the only parts that appear above the surface of the ground. There is no corolla. The calyx is very woolly, and divided into three broad, concave, acuminate segments, with the ends reflexed, of a deep-brownish purple color on the inside, and of a dull purple, inclining to greenish, externally. The filaments, which are twelve in number and of unequal length, stand upon the germ, and rise with a slender point above the anthers attached to them. Near the divisions of the calyx are these filamentous bodies, which may be considered as nectaries. The pistil consists of a somewhat hexagonal germ, and a conical grooved style, surmounted by six revolute stigmas. The capsule is six-celled, coriaceous, and crowned with the adhering calyx, containing many small seeds.

There are many varieties of the *Asarum*, with small or large leaves, rounded or mucronate, spotted or unspotted. The flowers also vary in color from greenish-purple to dark-blue. The names, *wild ginger*, *snakeroot*, are common to all these varieties, although very different in appearance, but similar in taste, smell, and properties. They are frequently and indiscriminately introduced into the bales containing the officinal drug, and commingled with it.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

A chemical investigation of the root of ASARUM CANADENSE has been made by Dr. Bigelow, which has been repeated by the late Mr. Richard Rushton. They found it to contain gum, starch, resin, fatty matter, chlorophyll, volatile oil, salts of lime and potassa, iron and lignin. The volatile oil has a light greenish-yellow color, a warm, fragrant, slightly bitterish, aromatic taste. It is soluble in all proportions in alcohol and ether, but less perfectly in water. From the close botanical analogy of the plant with the European *Asarum*, it might be supposed, like that, to possess emetic and cathartic properties, but, at least with the dried root or the leaves, such does not appear to be the fact. Where vomiting has been caused by the use of this plant, it is more attributable to the quantity taken, than to the possession of any inherent emetic qualities it may be supposed to exhibit.

The root alone is officinal, and is prepared by removing during the summer, and cleansing and drying in the shade; in this process, the radicles, from their delicacy, are separated. When fresh it has a yellowish color. As found in the shops, it is in long, more or less contorted pieces, about the thickness

of a straw or larger; the external covering is brownish, and wrinkled, the internal substance is white, hard, and brittle; occasionally the fragments of the radicles are attached. It comes, either in mass or in square packages, from the Shakers at Lebanon, New York, when it is connected with the leaves, and is subject to mouldiness from the partially dry state necessary to packing by pressure. Its taste is agreeably aromatic and slightly bitter; the smell is aromatic. It is by some supposed to be intermediate between that of ginger and serpentaria, by others thought to bear a closer resemblance to that of cardamone. The taste of the petioles which usually accompany the root, is more bitter, and less aromatic.

The root is an aromatic, stimulant tonic, and in a warm decoction is possessed of no inconsiderable diaphoretic properties, resembling the *Serpentaria* in its action on the system, and may be advantageously used as a substitute for it, but is rather more stimulating. In diseases of the skin, attended with fever, in which the eruption is tardy, or has receded, and the grade of action is low, it is thought to be useful by promoting the cutaneous affection. It has also been strongly recommended in intermittent fevers, and though itself generally inadequate to the cure of the complaint, often proves serviceable as an adjunct to Peruvian bark. With the same remedy it is frequently associated, and with considerable advantage, in the treatment of typhus diseases.

Asarum, like all other articles of the same class, must vary its effects on the animal economy with the mode of exhibition; thus its sudorific power will be manifested by exhibition in warm infusion, and in large quantities in this form it will frequently prove emetic; in cold infusion or tincture, it is cordially stimulating and tonic.

The leaves, when dried and powdered, have powerful errhine properties, and make a fine stimulating cephalic snuff, which may be used in all disorders of the head and eyes. They excite irritation, and a discharge of mucus from the nasal membrane; and they are useful in certain affections of the brain, eyes, face, mouth, and throat, on the principle of counter-irritation; thus, in paralytic affections of the mouth and tongue, in toothache, and in ophthalmia.

The root is used by the inhabitants of many parts of the country as a substitute for ginger, and for many purposes is fully equal to it. M. Lemery, in his *Dictionnaire Universel des Drogues Simples*, published in 1733, alludes to its substitution for this purpose by the Aborigines of America. It also forms the basis of a spirituous drink, which may be made by the infusion of the whole plant in fermenting wine or beer.

The roots of the other American species, Asarum Virginicum, and Asarum arifolium, are similar in their properties, though perhaps not quite as aromatic or powerful.

№ 53.

ARUM TRIPHYLLUM.

wake robin.

ARACEÆ.

Arads.

No. 53.

ARUM TRIPHYLLUM.

DRAGON-ROOT. *Wild or Indian Turnip, Wake-Robin.*

Geog. Position. America.
Quality. Pungent, caustic.
Power. Expectorant, diaphoretic.
Use. Cough, chronic bronchitis, asthma, dropsy, &c.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER ARACEÆ.

Linnæan Classification.

CLASS XXI. *Monœcia.* ORDER *Polyandria.*

AUTHORITIES. — Lin. Sp. Pl. 1370. Willd. Sp. Pl. IV. 480. Woodv. Med. Bot. 25. Pursh. Flor. N. A. 399. Lind. Flor. Med. 601. Bigelow, Med. Bot. I. 52. Raf. Med. Flor. I. 66. U. S. Disp. 122. Ec. Disp. U. S. 81. Loud. Encyc. Pl. 860. Pereira, Mat. Med. II. 86. Griff. Med. Bot. 616. Gray, Bot. Text-Book, 899. Beach, Fam Phys. 645. Howard, Bot. Med. II. 223. Kost, Mat. Med. 228. Henry, Med. Herb. 168. Wood, Class-Book, 519.

GENUS ARUM.

Formerly *Aron*, supposed to be an ancient Egyptian word, by which the *Arum colocasia* was known. The last-mentioned name is an alteration of its Arabic denominative *golqas*, according to Forskahl.

SYNONYMES. — Le Gouet (Fr.), Der Aronswurz (Ger.), Kalfsvoet (Dutch), Aro (It.), Yaro (Sp.), Munskesvands (Dan.).

THE ESSENTIAL CHARACTERS.

FLOWERS. Mostly monœcious and achlamydeous, arranged upon a naked or apathaceous spadix. *Perianth*, when present, consisting of four – six parts.
STAMENS. Definite or indefinite, hypogynous, very short. *Anthers* ovate, extrorse.
OVARY. Free, one – several-celled. *Stigma* sessile.
FRUIT. Berry succulent or dry.
SEEDS. Solitary or several, with fleshy albumen.

The Secondary Characters.

Arum. *Flowers* sometimes dicœcious. *Spathe* cucullate, convolute at base. *Perianth* none. *Spadix* cylindric, naked above, staminate below the middle, and pistillate at the base *Berry* one-celled, many-seeded.

Spathe cucullate, one-leaved. *Spadix* not entirely covered with the fructification, being more or less naked above, with pistillate flowers beneath, and staminate in the middle (sometimes a few are staminate beneath). *Berry* mostly one-seeded, generally cirrhose-glandular beneath.

The Specific Characters.

Arum triphyllum. Acaulescent. *Leaves* trifoliate, mostly in pairs. *Leaflets* oval, acuminate. *Spadix* clavate. *Spathe* ovate, acuminate, flat and defluted above.

Subcaulescent. *Leaves* ternate. *Leaflets* ovate-acuminate, peduncled, with the laminæ as long as the spadix.

The Artificial Characters.

Class Monœcia. *Stamens* apart from the pistils in different flowers, upon the same plant. Order Polyandria. *Herbs.* Endogens. Monœcious. *Flowers* incomplete on a spadix. *Spathe* present. *Stamens* more than two. *Root* with a fleshy corm or rhizoma.

NATURAL HISTORY.

The Dragon-root or Wake-Robin is a native of America, both North and South, and is common in all parts of the United States, growing in damp woods, in swamps, along ditches, and in other moist shady places. There are three varieties of this species of Arum, distinguished by the color of the spathe. One variety, *virens*, has a green spathe. Another, *atropurpureum*, has a dark-purple spathe. And the other, *album*, has a white spathe.

This plant has a perennial root or cormus, which, early in the spring, sends up a large, ovate, acuminate, variously colored spathe, convoluted at bottom, flattened and bent over at top like a hood, and supported by an erect, round, green or purplish scape. The scape is from eight to twelve inches high, embraced at the base by the long sheaths of the petioles. Within the spathe is a club-shaped spadix, much shorter than the spathe, green, purple, black, or variegated, rounded at

the end, and contracted near the base, where it is surrounded by the stamens or germs in the diœcious plants, and by both in the monœcious, the female organs being below the male. The spathe and upper portion of the spadix gradually decay, while the germs are converted into a compact bunch of shining scarlet berries. The leaves, which are usually one or two in number, and stand on long, sheathing footstalks, are composed of three ovate-accuminate leaflets, paler on their under than their upper surface, and becoming glaucous as the plant advances.

The flowering system of the plants of this tribe presents many points of interest. On opening the spathe, it is found to be whitish in its interior, and closely surrounding a central column or spadix, on which the minute flowers are crowded. On detaching these are found at the bottom several tiers of round ovaria, which do not possess any proper style or stigma, but have a sort of puckering at their points, which serves the purpose of the latter. Each is one-celled and contains two erect ovules. Above, there are two or three rows of abortive or undeveloped ovaria, in the form of horned pear-shaped bodies. Above these, again, there is a crowd of stamens with very short filaments, and these are surmounted by another cluster of abortive ovaria. Here, accordingly, is a large cluster of pistilliferous and staminiferous flowers, in which the floral envelopes are entirely wanting, and in which, therefore, the separate flowers can scarcely be distinguished. Each ovarium, however, is the essential part of a pistilline flower, whilst every cluster of anthers is the essential part of a stamineous flower, so that here are the most necessary organs of fructification reduced almost to the lowest condition in which they can exist.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

All parts of the ARUM TRIPHYLLUM are highly acrid, and this is more apparent in the root, which only is officinal. In the green state it is stimulant, expectorant, carminative, and diaphoretic. The root is roundish, flattened, an inch or two in diameter, covered with a brown loose, wrinkled epidermis, and internally white, fleshy, and solid. In the recent state it has a peculiar odor, and is violently acrid, producing when chewed an insupportable burning and biting sensation in the mouth and throat, which continues for a long time, and leaves an unpleasant soreness behind. These symptoms are allevi-

ated by buttermilk or oily liquors. Its action does not readily extend through the cuticle, as the bruised root may lie upon the skin till it becomes dry without producing pain, or even redness. The acrid principle is extremely volatile, and is entirely driven off by heat, and by drying. It is not imparted to water, alcohol, ether, or olive-oil. The root loses nearly all its acrimony by drying, and in a short time becomes quite inert, and almost an insipid farinaceous substance. It may, however, be kept in its green state a considerable time by burying it in moist sand in a cellar. It is found to contain, besides the acrid principle, from ten to seventeen per cent. of starch, albumen, gum, sugar, extractive lignin, and salts of potassa and lime. The starch may be obtained from it as pure white and delicate as from the potato. The fecula of the dried root is a pure and excellent arrowroot. In the recent or partially dried state it has been used as a carminative stimulant, in flatulence, colic, &c.

Arum in its recent state is a powerful local irritant, possessing the property of stimulating the secretions, particularly those of the skin and lungs. It has been given with considerable advantage in asthma, pertussis, chronic catarrh, chronic rheumatism, and various affections connected with a cachectic state of the system. Immediately taken from the ground, it is too acrid for use. The recently dried root, which retains a portion of the acrimony, but not sufficient to prevent its convenient administration, is usually preferred. It may be given in the dose of ten grains, mixed with gum Arabic, sugar, and water, in the form of emulsion, repeated two or three times a day, and gradually increased to half a drachm or more. The powder made into a paste with honey or syrup, and placed in small quantities on the tongue, so as to be gradually diffused over the mouth and throat, is said to have proved useful in the aphthous sore mouth of children.

In Europe the dried root of the *Arum maculatum* (whose medicinal properties are precisely those of the plant under consideration) is sometimes employed by the common people in times of great scarcity as a substitute for bread; and an amylaceous substance is prepared from it in England, called Portland arrowroot, or Portland sago. This substance is a white powder, whose particles examined by the microscope are found to be exceedingly small. They are circular, mullar-shaped, or polyhedral. The angular appearance of some of them probably arises from compression. The hilum is circular and apparently lies in a small depression. It cracks in a linear or stellate manner. This substance is very nutricious and demulcent, affording a light, mild, and agreeable article of diet, well adapted for the sick and convalescent, and particularly suited from its demulcent properties to bowel complaints and diseases of the urinary passages.

Nº 54.

MENTHA PIPERITA.

LABIATÆ.

Labiate Plants.

No. 54.

MENTHA PIPERITA.

Peppermint.

Geog. Position. Europe.
Quality. Penetrating, grateful.
Power. Stomachic, stimulant.
Use. Nausea, griping, flatulent colic, to disguise the unpleasant taste of other medicines.

BOTANICAL ANALYSIS.

Natural Classification.

Order LABIATÆ.

Linnæan Classification.

Class XIV. *Didynamia.* Order *Gymnospermia.*

Authorities.— Willd. Sp. Pl. III. 74. Woodv. Med. Bot. 336. Lind. Flor Med. 487. Raf. Med. Flor. II. 242. Whitlaw, Med. Disc. 116. Lond. Disp. 439. U. S. Disp. 475. Ec. Disp. U. S. 261. Loud. Encyc. Pl. 500. Ballard and Garrod, Mat. Med. 355. Thomson, Mat. Med. *104. Pereira, Mat. Med. II. 288. Griff. Med. Bot. 502. Carson, Illust. Med. Bot. II. 16. Gray, Bot. Text-Book, 840. Beach, Fam. Ph. 663. Howard, Bot. Med. 269. Kost, Mat. Med. 329. Wood, Class-Book, 416.

Genus MENTHA.

Μίνθα or *μίνθη*, in old Greek. The Poets feign that Mintha was a daughter of Cocytus, transformed into the plant which bears her name; an allegorical description of the terrible effects ascribed to the plant by the ancients.

Synonymes.— Menthe poivrée (Fr.), Pfeffermunze (Ger.), Peperminte (Dutch), Peparmynta (Swed.), Menta Piperita (It.), Verbal nina de saper de Pimienta (Sp.), Hortelaa apimentada (Port.).

The Essential Characters.

Calyx. Tubular, regularly five-toothed or cleft or bilabiate, persistent.
Corolla. Bilabiate (rarely regular, five-toothed), the upper lip bifid or entire, overlapping in æstivation the lower three-cleft one.
Stamens. Four, didynamous, or sometimes only two, the

upper pair being abortive or wanting, situated on the corolla tube. *Anthers* mostly two-celled.

Ovary. Free, deeply four-lobed, the single style arising from the base of the lobes.

Fruit. One – four hard nuts or achenia.

Seeds. Erect, with little or no albumen. *Embryo* erect. *Cotyledons* flat.

The Secondary Characters.

Mentha. *Calyx* equally five-toothed. *Corolla* nearly regular, four-cleft, the broadest segment emarginate. *Stamens* four, straight, distant. *Anthers* cells parallel. *Filaments* naked.

Corolla nearly equal, four-lobed, broadest division emarginate. *Stamens* erect, distant.

The Specific Characters.

Mentha piperita. *Leaves* smooth, ovate-lanceolate, serrate, petiolate. *Bracts* lanceolate. *Calyx* quite smooth at base.

Spikes obtuse, interrupted below. *Leaves* subovate, somewhat glabrous, petioled. *Stem* glabrous at the base.

The Artificial Characters.

Class Didynamia. *Stamens* four, two of them longer than the other two. Order Gymnospermia. *Seeds* naked. *Achenia* four (or fewer) included in the calyx. *Corolla* monopetalous and labiate.

NATURAL HISTORY.

Peppermint is a native of Europe, and has become naturalized in many parts of the United States. It is a perennial herbaceous plant, and grows in wet and moist places, flowering the latter part of the summer. It is occasionally found growing wild along the fences and by-places of the country. In many parts of New England, and especially in the western part of New York, in Ohio, and New Jersey, the plant is largely cultivated for the sake of its volatile oil. All the species are raised by the same methods, by parting the roots, by offsetting young plants, and by cuttings of the stalks. The cultivators of the plant observe that, to keep up its quality, the roots must be transplanted every three years, otherwise it degenerates into the flavor of Spearmint, *Mentha viridis*. If

the plant be cut in wet weather it changes to black and is little worth.

The root of the plant is creeping; the stem quadrangular and channelled, nearly upright, and about two feet high, branching, purplish, and rather hairy with the hairs bent backwards. The leaves are of a dark-green color, opposite, petiolate, ovate, rather pointed, serrated, the upper side smoother and less pubescent than the under, which is paler with white and purple veins. The flowers are in terminal spikes, solitary, almost capitate, interrupted beneath, with the lower whorl more remote, and on a footstalk. The bracts are lanceolate and ciliated. The calyx is furrowed, tender, studded with glandular points. The base entirely naked, very smooth and five-cleft, with the teeth of a blackish purple color, ciliated. The corolla is purple, and conceals within its tube the anthers, which are on short filaments. The germen is four-cleft, with a filiform style longer than the corolla, and furnished with a bifid stigma. The four-cleft germ is converted into four seeds, lodged in the calyx.

Sir J. E. Smith supposes that this plant was discovered by Dr. Eales, and says that what is called Peppermint in the North of Europe is merely a variety of *Mentha hirsuta*, having a similar odor, and is the *Mentha piperita* of the Linnæan herbarium.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The whole plant is officinal. The odor of both the recent and dried plant is peculiar and well known, aromatic, penetrating, and grateful, in some degree resembling camphor; and the taste pungent, warm, glowing, and bitterish, followed by a sensation of coldness when air is drawn into the mouth. It gives out its properties to alcohol and partly to water. It contains volatile oil, a bitter principle, resin, tannic acid, and woody fibre. The oil can be obtained separate by distillation. It is colorless, but becomes yellowish or even reddish by age. It has a powerful aromatic odor, and an extremely pungent taste. The camphor it contains is isomeric with the oil.

Peppermint is employed in medicine for several purposes. It is stomachic, stimulant, antispasmodic, and carminative. It is chiefly used to allay nausea and griping, to relieve flatulent colic, and in hysteria; or as a vehicle to cover the nauseous taste of other medicines. It is, however, to many palates extremely disagreeable. The fresh herb, bruised and applied over the epigastrium, often allays sick stomach, and is espe-

cially useful in the cholera in children. The medicine may be given in infusion, but the volatile oil, either alone or in some state of preparation, is generally and almost always preferred.

There are several varieties, and all are herbaceous and odorous, with verticillate flowers, either axillary or spiked. Several of the species are officinal.

The following are the principal preparations of this medicine, with their uses.

AQUA MENTHÆ PIPERITÆ. Take of peppermint a pound and a half, pour over it as much water as will prevent empyreuma during the distillation. Distil a gallon.

Peppermint water has the flavor and taste of the plant in a very considerable degree. It is sometimes used alone as a carminative and stimulant, but more generally for the purpose of covering the taste of other medicines.

SPIRITUS MENTHÆ PIPERITÆ. Take of oil of peppermint, by weight, *six scruples and a half;* proof spirit *four pints and a half;* water, *sufficient to prevent empyreuma.* Add the spirits to the oil, and pour on them as much water as will prevent empyreuma, then distil with a slow fire one gallon.

Spirit of peppermint is a useful carminative in nausea and flatulence, and as an adjunct to purgative remedies. This spirit has no advantage over a simple solution of the oil in alcohol, and may therefore with great propriety be substituted for it. The solution is usually kept in the shops under the name of *essence of peppermint.*

OLEUM MENTHÆ PIPERITÆ. Obtained by submitting the fresh herb to distillation with water. Its odor is strong and its taste very pungent, but at the same time it impresses a sensation of coldness. The vapor of it applied to the eye causes a feeling of coldness. Its color is greenish-yellow, or nearly colorless, but it becomes white when exposed to the light, and reddish by age. Four pounds of the recent plant yield from one drachm and a half to three drachms and a half of the oil. The product is generally less than one per cent. In a warm, dry, and favorable season, the product of a given quantity of the fresh herb is double that which it yields in a wet and cold season.

Oil of peppermint is a stimulant and carminative, and is used occasionally as an antispasmodic. It is a common domestic remedy in cramp of the stomach, flatulent colic, and anorexia, and as a corrigent or adjuvant of other medicines. The dose is from one to three drops, and is most conveniently given rubbed up with sugar and then dissolved in water.

Besides the above, there are other popular preparations of peppermint extensively used. INFUSUM MENTHÆ PIPERITÆ, *Peppermint tea;* ROTULÆ MENTHÆ PIPERITÆ, *Peppermint drops;* THE LIQUEUR sold at the spirit-shops as mint or peppermint is used as a cordial.

Nº 55.

CONVOLVULUS SCAMMONIA.

Scammony.

CONVOLVULACEÆ.

Bindweeds.

No. 55.

CONVOLVULUS SCAMMONIA.

SCAMMONY. *Syrian Bindweed.*

Geog. Position. Europe.
Quality. Acrid, bitter, nauseous.
Power. Purgative.
Use. The root in costive habits.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER CONVOLVULACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Monogynia.*

AUTHORITIES. — Lin. Sp. Pl. 218. Willd. Sp. Pl. I. 844. Woodv. Med. Bot. II. 243. Lind. Flor. Med. 398. Whitlaw, Med. Disc. 28. Lond. Disp. 297. U. S. Disp. 661. Ec. Disp. U. S. 137. Loud. Encyc. Pl. 140. Ballard and Garrod, Mat. Med. 340. Thomson, Mat. Med. 918. Pereira, Mat. Med. II. 337. Griff. Med. Bot. 477. Carson, Illust. Med. Bot. II. 14. Gray, Bot. Text-Book, 846.

GENUS CONVOLVULUS.

From the Lat. convolvere, to entwine, from the habit. A large genus of twining or prostrate herbs.

SYNONYMES. — Scammonée (Fr.), Scammonium von Aleppo (Ger.), Scammonea (It.), Escamonea (Sp. and Port.), Het Scammoneum (Dutch). Sukmunya (Heb. and Arab.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* five, much imbricated, usually united at base, persistent.
COROLLA. Regular. *Limb* five-lobed or entire, plaited and twisted in æstivation.
STAMENS. Five, inserted into the base of the corolla, and alternate with its lobes.
OVARY. Two – four-celled, free. *Styles* united into one.
FRUIT. *Capsule*, two – four-celled, valves with septifragal dehiscence.

SEEDS. Few, large, with mucilaginous albumen. *Cotyledons* foliaceous or wanting.

THE SECONDARY CHARACTERS.

CONVOLVULUS. *Calyx* five-parted, naked, or with two small bracts near the base. *Corolla* campanulate or funnel-form. *Limb* five-plaited. *Stamens* shorter than the limb, rarely a little longer. *Ovary* two–four-celled. *Cells* one–two-ovuled. *Style* simple. *Stigma* simple or two-lobed. *Capsule* valvate, two–four-celled, four–six-seeded.

Calyx five-parted, with or without two bracts. *Corolla* funnel-form, plaited. *Stigma* two-cleft or double. *Cells* of the capsule two or three, each one or two-seeded.

THE SPECIFIC CHARACTERS.

CONVOLVULUS SCAMMONIA. *Stem* smooth. *Leaves* sagittate, posteriorly truncate. *Lobes* entire or elongate-laciniate. *Peduncles* very long, many-flowered.

Stem twining, herbaceous. *Leaves* sagittate, truncate behind, with pointed lobes at the base. *Peduncles* rounded, about three-flowered.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* rarely shrubby. *Stamens* alternate with petals. *Fruit*, capsule or berry. *Cells* with one or two seeds. *Corolla limb* entire.

NATURAL HISTORY.

CONVOLVULUS SCAMMONIA is a native of Syria, Cappadocia, and Cochin China. It grows in abundance in the mountains between Aleppo and Latachea, and flowers early in summer. From these places the greater part of the Scammony of commerce is obtained. The root, which is perennial and fusiform, is tapering, from three to four feet long, and from nine to twelve inches in circumference, covered with bark of a light-gray color; it is branched towards the bottom, and every part of it contains a milky juice. It sends up many slender, twining stems, which spread themselves in the ground, or climb on neighboring shrubs or trees to the extent of fifteen or twenty feet, adorned with arrow-shaped, smooth, bright green leaves upon long footstalks. The flowers are in pairs upon

the pedicles, consisting of a double calyx of four emarginated leaflets in each row, and a funnel-shaped, pale-yellow plaited corolla. The capsule is three or four-celled, containing small pyramidical-shaped seeds.

The plant will grow readily in any soil, and is increased by the roots or seeds, and sometimes by cuttings in sand. SCAMMONY is obtained from the root of this plant in the following manner. Having cleared away the earth from about the root in the beginning of June, the peasants cut off the top in an oblique direction, just below the corona, or about two inches from the point whence the stems arise and below it. Under the most depending part of the slope they fix a shell, or some such utensil or receptacle, into which the juice flows spontaneously. It is left there about twelve hours, which suffice for draining off the whole juice: this is in small quantity, each root affording but a few drachms. The juice from the several roots is added together, often in an old shoe or leg of a boot, for want of something better, where in a little time it grows hard, and is the genuine Scammony.

This concrete is a gummy resin, of a light, shining gray color and friable texture. It is imported from Aleppo in what are called drums, which weigh from seventy-five to one hundred and twenty-five pounds each; and from Smyrna in cakes like wax, packed in chests. The former is light and friable, and is considered the best; that from Smyrna is more compact and ponderous, less friable, and more abounding in impurities. This is owing to the craft and cupidity of the Jews, who make it their business to go where the Scammony is prepared, and buy it while yet soft of the peasantry, and mix it with the expressed juice of the stalks and leaves, with wheat-flour, ashes, soot, fine sand, and various other articles, with which Dr. Russell found it adulterated. At Aleppo they have not the same opportunities, and therefore the Scammony from the latter place is most valuable.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Good SCAMMONY is light, friable, extremely like a honeycomb, and should *lactify* or become milky when wetted with the finger. It has a peculiar characteristic, rather heavy odor, which has been compared to that of old ewe-milk cheese, and a bitterish, slightly acrid taste. The color is blackish or bluish-gray, changing to dirty white, but the color is not a sufficient criterion of its goodness or purity; the fine and pure appear-

ance of the concrete alone is the proper test. The fracture is irregular, but smooth, faintly shining, and the sharp edges of the shivers are of a lighter gray color and translucent. It is pulverulent, and the powder has a light-gray color. Its specific gravity is 1.235 (*Brisson*). When it is of a dark color, heavy, and splintery, it should be rejected. When triturated with water, nearly one fourth of it is dissolved, and the solution appears slightly mucilaginous, opaque, and of a greenish-gray color. This solution is not affected by alcohol, solutions of superacetate and acetate of lead and sulphate of iron, nor precipitated by the acids; but with sulphuric acid it gives out the odor of vinegar. Solution of ammonia does not alter it, but that of potassa occasions a yellowish precipitate, which is quickly redissolved on the addition of an acid. Ether takes up two parts in ten of Scammony, and when evaporated leaves a brownish semitransparent resin. Alcohol dissolves two thirds of its weight, but proof spirit is its best menstruum, taking up the whole except the impurities. Aleppo Scammony contains, according to *Bouillon*, *La Grange*, and *Vogel*, 0.60 of resin, 0.20 of extractive, 0.03 of gum, and 0.35 of impurities. Smyrna Scammony contains 0.29 of resin, 0.08 of gum, 0.05 of extractive, and 0.58 of impurities. When these impurities consist of flour, sand, or ashes, they may be detected by dissolving the sample in proof spirit, as they sink and remain undissolved; but Scammony is sometimes also adulterated with the expressed juice of *Cynanchum monspeliacum*, and a fictitious Scammony is sold for the real, consisting of jalap, senna, manna, gamboge, and ivory black.

Scammony is a drastic cathartic, operating in general quickly and powerfully. The purest is that which is most active and soluble. The ancients were acquainted with its purgative qualities, and also employed it as an external application for removing hard tumors, itch, scurf, and fixed pains, but for the latter purposes it is now seldom or never used. It is a good purgative in the torpid state of the intestines, in leucophlegmatic, hypochondriacal, and maniacal subjects; in worm cases and the slimy state of the bowels to which children are subject; and as a hydragogue cathartic in dropsy. Scammony has been regarded by some as a cathartic of so irritating a nature as to require to be corrected by exposing it to the fumes of sulphur, defecating it with lemon-juice and other acids, and uniting it with demulcent mucilages; but except in an inflamed or very irritable state of the bowels, it is a safe and efficacious purgative. It is, however, apt to gripe, on which account it is generally united with an aromatic, or a drop of some essential oil.

The dose is from five to fifteen grains, whether given in powder as a bolus, or in the form of mixture triturated with almonds, gum, or extract of liquorice and water.

№ 56.

DATURA STRAMONIUM.

Thorn apple.

SOLANACEÆ.

Nightshades.

No. 56.

DATURA STRAMONIUM.

THORN-APPLE. *Jamestown Weed.*

Geog. Position. America.
Quality. Fetid, nauseous.
Power. Narcotic, acrid.
Use. Asthma, chronic pains, &c.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER SOLANACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Monogynia.*

AUTHORITIES. — Lin. Sp. Pl. 255. Willd. Sp. Pl. I. 1008. Woodv. Med. Bot. 124. Pursh. Flor. N. A. I. 141. Lind. Flor. Med. 510. Bigelow, Med. Bot. I. 17. Raff. Med. Flor. I. 146. Whitlaw, Med. Disc. 32. Lond. Disp. 323. U. S. Disp. 709. Ec. Disp. U. S. 156. Loud. Encyc. Pl. 134. Ballard and Garrod, Mat. Med. 346. Thomson, Mat. Med. 808. Pereira, Mat. Med. II. 319. Griff. Med. Bot. 490. Carson, Illust. Med. Bot. II. 20. Gray, Bot. Text-Book, 849. Beach, Fam. Ph. 655. Henry, Med. Herb. 271. Wood, Class-Book, 446.

GENUS DATURA.

An alteration of the Arabic name *Tatorah*. FORSKAHL. *Tatula* is altered from *Datula*, a name given to the Datura by the Turks and Persians.

SYNONYMES. — Pomme épineuse, Stramoine (Fr.), Der Stechapfel (Germ.), Stramonio (It.), Estramonio (Sp.), Doornappel (Dutch), Estramonia (Pol.), Durman (Russ.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* four – five, more or less united, mostly persistent.
COROLLA. Regular. *Limb* four – five-cleft, plaited in æstivation, deciduous.
STAMENS. Four – five (sometimes one abortive), inserted on the corolla, alternate with its segments. *Anthers* bursting longitudinally, rarely by terminal pores.
OVARY. Free (superior) two-celled, (*four-celled* in DATURA,)

with the placenta in the axis. *Styles* and *stigmas* united into one.

FRUIT. A *capsule* or *berry*.

SEEDS. Numerous. *Embryo* curved, being in fleshy albumen.

THE SECONDARY CHARACTERS.

DATURA. *Calyx* large, tubular, ventricose, five-angled, deciduous, with a persistent, orbicular, peltate base. *Corolla* infundibuliform. *Tube* cylindric, long. *Limb* five-angled and plaited. *Stamens* five. *Stigma* obtuse, bilamellate. *Capsule* two-celled, four-valved. *Cells* two – three-parted.

Calyx tubular, angled, caducous, with a permanent orbicular base. *Corolla* funnel-form, plaited. *Capsule* four-valved, two-celled, and each cell half divided, generally thorny.

THE SPECIFIC CHARACTERS.

DATURA STRAMONIUM. *Stem* dichotomous. *Leaves* ovate, smooth, angular-dentate. *Capsule* spiny, erect.

Pericarps spinose, erect, ovate. *Leaves* ovate, glabrous, angular, dentate.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* (rarely shrubby). *Stamens* alternate with petals. *Fruit*, capsule or berry. *Cells* two, with many seeds. *Æstivation* plicate.

NATURAL HISTORY.

It is very uncertain where the DATURA was originally native. It certainly appears indigenous to America, but it was first introduced into England from Constantinople in *Gerard's* time, and by him "dispersed through the land." Professor Martyn says, "that in the earth brought with plants from various parts of this extensive continent, they are sure to have the Thorn-Apple come up." It is an erratic and wandering plant, common to all parts of the world, and spreading with the utmost facility. It is probably a native of Persia or India, and has spread to Europe, Africa, and America. It has been supposed to be a native of North America, but it has appeared there only since its colonization. The Indians call it the White Man's Plant. In the Western States it has sprung up only since their settlement, and probably from seeds carried

thither. The plant has handsome flowers, sometimes four inches long. It has been cultivated for its beautiful blossoms, although it has an unpleasant narcotic smell. Children yet use them for garlands by forming strings of the flowers within each other.

Datura Stramonium is now become a noxious weed, infesting fields, &c. It is commonly met with near houses, along the roads, in commons, old fields, &c., and never in woods or mountains. It is found in all the States, also in Canada, Mexico, and in South America. In the Southern States it blossoms from May to September, and in the Northern States from July to October. It rises about two feet in height, with a round stem, branching and dichotomous above, spreading, and leafy. The leaves are large, rising from the forks of the stem on long round petioles, of a dark-green color on the upper surface, and pale beneath, irregularly ovate-triangular in figure, sinuated and unequal at the base. The flowers are large, axillary, and solitary, on short erect pedunCles. The calyx is about two inches in length, tubular, pentangular, and five-toothed. The corolla longer, of a white color, funnel-shaped and plaited, with the filaments, which support oblong, flat anthers, adhering to the tube, and the style filiform, terminated with a thick club-shaped stigma. When the corolla and its included parts drop, the calyx also separates, except the base, which remains, and becoming reflex enlarges with the receptacle as a support to the fruit. The fruit is a large, fleshy, ovate-roundish four-cornered capsule, beset with sharp, awl-shaped spines, four-celled at the base, two-celled at the apex, and containing a great number of reniform compressed seeds.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Datura Stramonium has a narcotic, fetid odor, producing headache; a bitterish nauseous taste, and gives to the saliva a deep green tinge when chewed. The analysis of *Prommitz* gives as the components of Thorn-Apple, gummy extractive 58, extractive 6, chlorophyll 64, albumen 15, resin 12, and phosphate of lime and magnesia 23 = 178 parts. According to Wedenberg (*Dissertatio Medica de Stramonii Usa, &c.*, Upsal, 4to), it contains gum and resin, a volatile matter (carbonate of ammonia), and a narcotic principle which has lately been ascertained to be an alkaline salt. It is obtained from the seeds, in which it is combined with malic acid, and named

Daturine. It is nearly insoluble in water and in cold alcohol, but boiling alcohol dissolves it, and in cooling lets it fall in flocculi. It is crystallized with difficulty, but has been obtained in quadrangular crystals. It forms neutral salts with the acids. The medicinal virtues of the herb are extracted both by water and alcohol. The watery infusion is transparent, with a very pale-yellow hue, which is dissipated by acids, but very much deepened by the alkalies. It throws down whitish precipitates with acetate and superacetate of lead, and a black precipitate with nitrate of silver. Solution of sulphate of iron strikes a deep olive color, and muriate of mercury renders it milky, but neither is precipitated till after a very considerable time.

Thorn-Apple is narcotic and stimulant. *Baron Stoerck* first recommended it as an internal remedy in cases of mania and epilepsy. Numerous cases have been recorded in which it has proved a benefit in these diseases, but the general result of the practice has not been satisfactory, and it is now considered rather as useful in allaying the excessive mobility of the system, than as tending to the absolute cure of the complaint. Its good effects have been more marked in asthma, especially of the spasmodic kind, used as an inhalation by smoking or otherwise. It requires, however, much caution in its use. Dr. Bigelow has given some very judicious remarks on its employment, and others may be found in Dr. Dunglison's practice of medicine. Dr. Barton regards it as a remedy of great efficacy. He found that when the dose of the dried herb was gradually increased to thirty grains, it dilated the pupil, and produced paralysis of the eyelids, effects which were removed by a blister. Dr. Marcet, who experimented largely with this remedy, observes that many kinds of painful diseases were more relieved by it when used internally, than by any other narcotic; that its effects on the bowels were rather relaxing than astringent, and that the great objection to its employment was the occasional production of disagreeable nervous symptoms.

Cataplasms of the bruised fresh leaves have been successfully used as an application to inflammatory tumors, and for discussing masses of indurated milk in the breasts of nursing women. An ointment made with the powdered leaves has afforded much relief in hœmorrhoids and painful ulcers. This ointment has also been recommended in nymphomania to lessen venereal excitement.

All parts of the plant are used, but the seeds, from containing most *daturine*, are the most powerful. The dose of the powdered leaves is one grain; of the seeds, half a grain; of the extract of the seeds, a quarter of a grain; that from the leaves, a grain; of the tincture, ten to twenty drops, — all to be gradually increased if required.

№ 57.

COPTIS TRIFOLIA.

Gold Thread.

RANUNCULACEÆ.

Crowfoots.

No. 57.

COPTIS TRIFOLIA.

GOLDTHREAD. *Mouth-root.*

Geog. Position. Europe, America.
Quality. Bitter.
Power. Stomachic, tonic.
Use. Dyspepsia, debility, promoting digestion.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER RANUNCULACEÆ.

Linnæan Classification.

CLASS XIII. *Polyandria.* ORDER *Polygynia.*

AUTHORITIES. — Willd. Sp. Pl. 1338. Pursh. Flor. N. A. II. 390. Lind. Flor. Med. 8. Bigelow, Med. Bot. I. 60. Barton, Veg. Mat. Med. II. 97. Raf. Med. Flor. I. 127. U. S. Disp. 282. Ec. Disp. U. S. 139. Loud. Encyc. Pl. 488. Ballard and Garrod, Mat. Med. 186. Thomson, Mat. Med. 77. Pereira. Mat. Med. II. 759. Griff. Med. Bot. 87. Carson, Illust. Med. Bot. I. 10. Gray, Bot. Text-Book, 704. Beach, Fam. Ph. 651. Howard, Bot. Med. 237. Kost, Mat. Med. 455. Wood, Class-Book, 144.

GENUS COPTIS.

From the Greek *κόπτω, to cut*, from the numerous divisions of the leaves, appearing as if cut.

SYNONYMES.

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* mostly five, sometimes three, four, or six, mostly deciduous and imbricated in æstivation.
COROLLA. *Petals* three – fifteen, hypogynous, sometimes irregular or wanting.
STAMENS. Indefinite, numerous, distinct, hypogynous. *Anthers* adnate or innate.
OVARY. Numerous, rarely solitary or few, distinct, seated on the torus.
FRUIT. Either dry achenia, or baccate, or follicular. *Embryo* minute, at the base of horny or fleshy albumen.

The Secondary Characters.

Coptis. *Sepals* five – six, oblong, concave, colored, deciduous. *Petals* five – six, small, cucullate, obconic. *Stamens* twenty – twenty-five. *Follicles* five – ten, stipitate, rostrate, diverging in a stellate manner, four – six-seeded.

Scape one-flowered. *Leaves* ternate. *Roots* long, filiform, golden-yellow.

The Specific Characters.

Coptis trifolia. *Leaves* three-foliate. *Scape* one-flowered. *Petals* much smaller than the sepals.

Petals five or six, caducous. *Nectaries* small, five or six, cowled. *Capsules* oblong, five – eight, stiped, stellate, beaked, many-seeded. Sometimes the nectaries are mistaken for corollas, and the corollas for calyxes.

The Artificial Characters.

Class Polyandria. *Stamens* twenty or more, arising from the receptacle (hypogynous). Order Polygynia. *Leaves* never peltate. *Herbs* with acrid colorless juice.

NATURAL HISTORY.

Goldthread inhabits the northern regions of this continent, and of Asia and Europe. It is found in Greenland and Iceland. The plant is an agreeable and pretty evergreen, and bears considerable resemblance to the strawberry in size and general aspect. It delights in the dark shady swamps and cold morasses of northern latitudes and Alpine regions, and abounds in Canada and in the hilly districts of New England. Its most southern limits are New England, New York, and the shores of Lake Erie. Its blossoms appear in May, and it continues in flower during the summer. It flourishes best in peat soil, and is increased by dividing the roots.

Coptis trifolia has a perennial, extensively creeping root, the slenderness and bright-yellow color of which have given rise to the name *Goldthread*, by which the plant is universally and commonly known. The caudex, from which the petioles and flower-stems proceed, is invested with ovate, acuminate, yellowish, imbricated scales. The leaves, which stand in long, slender footstalks, are ternate, with firm, rounded, or obovate sessile leaflets having an acute base, a lobed and acuminately crenate margin, and a smooth veined surface.

The scape or flower-stem is slender, round, rather longer than the leaves, and surmounted by one small white flower, with a minute mucronate bract beneath it. The petals are oblong, concave, and of a white color, the nectaries inversely conical, hollow and yellow at the top. The stamens have capillary filaments and globose anthers. The germs are from five to eight, stipitate, oblong, compressed, and surmounted by short recurved styles with acute stigmas. The capsules, which diverge in a star-like form, are pedicelled, compressed, beaked, and contain numerous black seeds attached to the inner side.

Another species of COPTIS has been described by Dr. Wallich, under the name of *Coptis Teeta*, peculiar to India, and grows in the mountainous regions bordering on Assam, and very much esteemed among the natives.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

COPTIS TRIFOLIA possesses the tonic properties of the simple bitters, and is very analogous in its action to the other plants of the same description, and belonging to the same natural family. Dried Goldthread, as brought into the market, is in loosely matted masses, consisting of the long, thread-like orange-yellow roots, frequently interlaced, and mingled with the leaves and stems of the plant. It is without smell, and has a purely bitter taste, unattended with aroma or astringency. It imparts its bitterness and yellow color to water and alcohol, but most perfectly to the latter, with which it forms a bright-yellow color. Its virtues appear to depend on a bitter extractive matter, which is precipitated by nitrate of silver and acetate of lead. It affords no evidence of containing either resin, gum, or tannin.

Goldthread is a simple tonic bitter, bearing a close resemblance to quassia in its mode of action, and applicable to all cases in which that medicine is prescribed; though not as powerful, it is far more palatable. From its higher price, however, it is not likely to come into general use as a substitute. It has long been popularly employed as a remedy in autumnal intermittent and remittent fevers, and has found much favor with the medical profession in the latter of these complaints. The state of the fever to which it is particularly applicable, is that which exists in the intervals between the paroxysms, when the remission is such as to call for the use of tonics, but is not sufficiently decided to justify a resort to the preparations of Peruvian bark. It is also occasionally useful during the progress of a slow convalescence, by pro-

moting appetite and invigorating the digestive function, and may be employed for the same purpose in dyspepsia and diseases of debility. From this statement it will be seen that COPTIS TRIFOLIA possesses in a very considerable degree the tonic powers which characterize the simple bitters. Its use has a tendency to excite the appetite, invigorate the powers of digestion, moderately increase the temperature of the body and the force of the circulation, and act in general as a good corroborant of the system. It may consequently be used in all cases of disease dependent on pure debility of the digestive organs, or requiring a general tonic impression. The condition of the stomach and of the system generally, however, and not of the particular disease, must be taken into consideration in prescribing it; and let it be remembered, there is scarcely a single complaint in which alone it can be advantageously administered under all circumstances. It may be proper, too, to mention that the article under consideration is not as powerful as gentian, quassia, and other pure bitters.

In the Eastern States Goldthread is considerably employed and held in high estimation as a local application in aphthous and other ulcerations of the mouth; for this purpose it is frequently macerated or chewed in the mouth; but the principal use made of it is for a gargle, particularly for children. Its astringent properties render it peculiarly serviceable when used with honey and borax. It may be substituted for golden seal or barberry. Dr. Bigelow, however, is of opinion that its efficacy is inert, and, being devoid of astringency, has been overrated, and that probably it has no other virtues in these complaints than such as are common to all the simple bitters; but notwithstanding this authority, it has the concurrent testimony of very many respectable physicians and practitioners in its favor.

All parts of the plant possess more or less bitterness, but this property is more or less intense in the root, which is the only officinal part. The roots ought to be collected in the summer; they are easily dried, but not so easily reduced to powder.

It may be given internally in substance, infusion, or tincture. The dose of the powder is from ten to thirty grains; that of the tincture, prepared by macerating an ounce of the root in a pint of diluted alcohol, one fluid drachm.

The other species of Coptis peculiar to India is much esteemed by the natives as a tonic and a stomachic, and from the experiments made with it by Mr. Twining, it would appear to justify the high character that has been bestowed upon it. It very closely resembles the COPTIS TRIFOLIA in its sensible qualities and medicinal properties.

Nº 58.

LILIUM CANDIDUM

White Lily.

LILIACEÆ.

Lilyworts.

No. 58.

LILIUM CANDIDUM.

White Lily.

Geog. Position. Syria, Palestine.
Quality. Flowers fragrant, Root mucilaginous.
Power. Emollient, anodyne.
Use. Epilepsy, dropsy, and maturating tumors.

BOTANICAL ANALYSIS.

Natural Classification.

Order LILIACEÆ.

Linnæan Classification.

Class VI. *Hexandria.* Order *Monogynia.*

Authorities. — Lin. Sp. Pl. 433. Willd. Sp. Pl. II. 186. Pursh. Flor. N. A. I. 228. Raf. Med. Flor. II. 238. Whitlaw, Med. Disc. 61. U. S. Disp. 1348. Ec. Disp. U. S. 243. Loud. Encyc. Pl. 264. Pereira, Mat. Med. II. 130. Griff. Med. Bot. 649. Gray, Bot. Text-Book, 916. Wood, Class-Book, 548.

Genus LILIUM.

From the Celtic word *Li*, which signifies whiteness. The Lily has always been considered the emblem of whiteness and purity.

Synonymes. — Le lis (Fr.), Die Lilie (Ger), Giglio (It.), Azucena (Sp.), Lelie (Dutch), Lilia (Pol.), Lilieja (Russ.).

The Essential Characters.

Calyx and Corolla. Confounded, colored, regular, occasionally cohering in a tube.

Stamens. Six (rarely four) inserted into the sepals and petals. *Anthers* introrse.

Ovary. Three-celled, many-ovuled. *Styles* united into one. *Stigma* often three-lobed.

Fruit. Capsular or fleshy, with several or many seeds in each cell.

Seeds. Numerous. *Albumen* fleshy.

The Secondary Characters.

Lilium. *Perianth* campanulate. *Segments* mostly recurved, each with a longitudinal groove within from the middle to the base. *Stamens* shorter than the style. *Capsule* sub-triangular, the valves connected with latticed hairs.

Corolla inferior, liliaceous, six-petalled. *Petals* with a longitudinal line from the middle to the base. *Stamens* shorter than the style. *Stigma* undivided. *Capsule* sub-triangular, with the valves connected by hairs crossing as in a sieve.

The Specific Characters.

Lilium candidum. *Leaves* scattered, lanceolate, narrowed at the base. *Flowers* campanulate, smooth inside.

Leaves lanceolate, scattered, tapering to the base. *Corolla* bell-form, glabrous within.

The Artificial Characters.

Class Hexandria. *Stamens* six. Order Monogynia. Endogens. *Ovary* superior. *Flowers* not spadaceous, distinct, equal, both petaloid. *Ovary* many-seeded.

NATURAL HISTORY.

The *White Lily* has always been ranked among the very oldest inhabitants of the pleasure or flower garden. In the time of *Gerard* in England, it was very generally cultivated, and doubtless at a much earlier period. A plant at once so stately, so showy, so fragrant, and at the same time so much disposed to increase, would of course soon be found of very general cultivation. There is also another reason why the plant is accelerated into notice, because, among other extraordinary powers anciently attributed to it, we are gravely told that it "*taketh away the wrinkles of the face.*"

The plant is fragrant and beautiful. The stem is round, green, thick, firm, and very upright, about four feet high. The leaves are numerous at the bottom, narrow and strap-shaped, with simple parallel veins, and these, together with the flower-stalks, shoot up from under-ground bulbs. The flower consists of six leafy portions similar in color, size, and form, and differing only in position. These envelop six stamens, within which is a three-celled ovarium, containing a number of ovules in each cell. The Lily is remarkable for its general development, and for the superior size of its flowers. It blossoms early in July, continues about three weeks,

after which the pleasure ground is evidently thinned of its beauty.

Of the White Lily there are three principal varieties. I. With double flowers. II. With flowers blotched with purple. III. With striped leaves, or leaves edged with yellow. The first two of these are esteemed merely as curiosities. The third plant acquires an accession of beauty which it has not originally, and to which the flower garden is greatly indebted for one of its chief ornaments.

The Lily increases most abundantly by offsets; hence it becomes necessary that the bulbs should be taken up and reduced every second or third year; but the striped-leaved variety increases much more slowly, and should therefore remain unmolested for a greater length of time. There is scarcely a soil or situation in which the Lily will not grow: it will thrive most in a soil moderately stiff and moist. Though a native itself of a warm climate, moderate severity of weather does not appear to affect it, and therefore we may learn not to regulate the culture of plants invariably by the climate in which they grow spontaneously. The best time for removing the bulbs of this plant is about the middle of August, but they may be transplanted almost at any time in the fall or spring.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The scent of the Lily is so powerful that sometimes persons are distressed to have the flowers near them, especially in a room, and there is a species cultivated under the name of the *Tuberose*, which is much more powerful, especially in the evening. This is one of the flowers that has been seen to emit electric sparks, which are supposed to be of electric origin. In general, however, the flowers of the Lily have an agreeable odor, which they impart to oil or lard, and an ointment or liniment is sometimes prepared from them and used as a soothing application in external inflammations. The infusion of the flowers of the Lily in olive-oil is emollient, and often applied externally under the name of *Lily-oil*. This oil was anciently esteemed for its virtues. It was applied to any part affected with pain or inflammation, particularly in cases of burns and scalds.

"There is nothing," says Mons. Tournefort, "very remarkable in the flowers of the Lily, except that, besides their digestive and anodyne faculty, they have also an anti-hysteric quality. Infuse them for some days in wine, and so distil

them; by this means a most excellent water may be obtained for hypochondriasis and hysteria, which every one does not know. The dose is from one to two or three spoonfuls, both for a preservative and a cure." — *Fr. Hoffm.*

The bulb of the *White Lily*, which consists of imbricated fleshy scales, is without odor, but has a peculiar, disagreeable, somewhat bitter and mucilaginous taste. It contains much mucilage, and a small portion of an acrid principle, which is dissipated or destroyed by roasting or boiling. In the recent state, it has been employed with advantage in dropsy. Boiled with water or milk it forms a good emollient cataplasm, more useful in domestic and popular, than in the regular practice.

"Gerard informs us, that William Goderus, Serjeant-Surgeon to Queen Elizabeth of England, found, by experience, that the root of White Lily stamped and strained with white wine, and given to drink for three or four days successively, expelled the poison of the pestilence, and caused it to break out in blisters on the skin; that the same learned gentleman had cured many of the dropsy with the juice of it, tempered with barley-meal, and baked in cakes, taking care that his patients did eat of it for a month or six weeks with their meat, and no other bread during that time."

Vegetation, when assisted by human contrivances, is the best possible means of improving the air, and rendering a country fitter for the abode of mankind. Cultivation removes the corruptive and decaying vegetables, and, by turning them under the earth, makes them nourish the ground instead of poison the air. It is well known, that many places, at one time deadly, are now healthy, not so much from the care of the new-comer in avoiding the remote causes of disease, as from the greater number of these causes being removed by cultivation. Wherever CEREALIA is capable of growing, that country is, or by human labor may be, made healthy. Cultivation likewise always renders a country *warmer*, for a larger quantity of vegetable matter is raised on a given space, and vegetable life is but the conversion of certain gases, oxygen, hydrogen, azote, and carbonic acid, into solid matter, and a change of form, — an alteration from a rarer to a denser state, — must always be accompanied by the extrication of heat. What is it that makes living vegetables so difficult of being frozen, compared to dead ones, but this constant formation and existence of caloric in them? As an example of the evolution of heat by the process of vegetation, it may be mentioned, that, on looking into a wood in spring, we shall find the small plants more advanced in size and strength than those of the plains. In the woods small berries are found much sooner ripe than in the cleared lands.

N° 59.

APOCYNUM ANDROSÆNIFOLIUM.

Dogsbane, Bitter-root, Milk weed.

APOCYNACEÆ.

Dogbanes.

No. 59.

APOCYNUM ANDROSÆMIFOLIUM.

DOGBANE. *Bitter-root, Milkweed, Indian Hemp.*

Geog. Position. America.
Quality. Bitter.
Power. Tonic, vermifuge.
Use. Dropsy, intermittent fever, syphilis.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER APOCYNACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Digynia.*

AUTHORITIES. — Lin. Sp. Pl. 311. Willd. Sp. Pl. I. 1259. Pursh, Flor. N. A. I. 179. Lind. Flor. Med. 534. Bigelow, Med. Bot. II. 148. Raf. Med. Flor. I. 49. U. S. Disp. 106. Ec. Disp. U. S. 69. Loud. Encyc. Pl. 194. Ballard and Garrod, Mat. Med. 333. Thomson, Mat. Med. 107. Pereira, Mat. Med. II. 375. Griff. Med. Bot. 449. Gray, Bot. Text-Book, 853. Beach, Fam. Ph. 646. Howard, Bot. Med. 218. Kost, Mat. Med. 123 Wood, Class-Book, 456.

GENUS APOCYNUM.

From the Greek *ἀπό, away*, and *κύων, a dog;* that is to say, a plant from which dogs must be driven. Pliny says his *Apocynum* is mortal to them.

SYNONYMES. — L'apocin (Fr.), Der Hundekohl (Ger.), Apocino (It.), Apocino (Sp.), Hondsdood (Dutch), Hundedod (Dan.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* five, united at base, persistent.
COROLLA. Five-lobed, regular, twisted in æstivation, deciduous.
STAMENS. Five, arising from the corolla and alternate with its segments. *Filaments* distinct. *Anthers* two-celled, opening lengthwise, sometimes slightly connected. *Pollen* granular, globose or five-lobed, immediately applied to the stigma.
OVARY. Two, distinct or rarely united. *Styles* distinct or

united. *Stigmas* united into one, which is common to both styles.

FRUIT. *Follicles* two, rarely one of them abortive.

SEEDS. Numerous, pendulous, with or without a coma, albuminous. *Embryo* foliaceous.

THE SECONDARY CHARACTERS.

APOCYNUM. *Calyx* very small. *Corolla* campanulate. *Lobes* short. *Stamens* included. *Filaments* short, arising from the base of the corolla, and alternate, with five glandular teeth. *Anthers* sagittate, connivent, cohering to the stigma by the middle. *Ovaries* two. *Stigmas* connate. *Follicles* long, sublinear, distinct.

Corolla bell-form. *Stamens* with converging anthers, proceeding from the middle of the stigma, and alternating with five nectaries. *Stigma* thick, almost sessile. *Follicles* in pairs, long, linear.

THE SPECIFIC CHARACTERS.

APOCYNUM ANDROSÆMIFOLIUM. Smooth. *Leaves* ovate. *Cymes* lateral and terminal. *Limb of corolla* spreading. The tube longer than the calyx.

Stem erect and branching. *Leaves* ovate, glabrous. *Cymes* lateral and terminal. *Tube of the corolla* longer than the calyx, with a spreading limb.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER DIGYNIA. Monopetalous. *Stamens* inserted on the pistil, distinct. *Leaves* opposite. *Juice* milky.

NATURAL HISTORY.

The plant DOGBANE is indigenous, perennial, and herbaceous. It flourishes in all parts of the United States, from Canada to Carolina. It is found in woods, hills, and in dry or sandy soils, along fences, and in old fields. It is rare in limestone soils, or on rich land. It blossoms in summer from June to July. It prefers a little peat added to common soil, is of easy cultivation, and increases rapidly by suckers.

The root is large, and like other parts of the plant contains a milky juice. The stem is erect, smooth, simple below, branched above, usually reddened on the side exposed to the sun, and covered with a tough fibrous bark. Leaves dark green above, paler beneath, opposite, rounded at base and

acute at apex, about two or three inches long. The flowers are white, tinged with red, and grow in loose, nodding terminal or axillary cymes. Cymes paniculate at the top of the branches, and in the axils of the upper leaves. The pedunc-les are furnished with very small acute bracts. Calyx much shorter than the corolla. Corolla as long as the pedicels, bell-shaped, white, striped with red, with five acute spreading segments. The fruit consists of a pair of long linear acute follicles, containing numerous imbricated seeds attached to a central receptacle, and each furnished with a long seed-down.

The other species of the same genus, says Rafinesque, have the same properties in a less degree. The *Apocynum cannabinum* is distinguished from the above by smaller leaves and flowers in shorter panicles, while the *Apocynum hypericifolium* has prostrated stems with narrow leaves, and grows only on the banks of streams and lakes.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

APOCYNUM ANDROSÆMIFOLIUM is a very active plant. It contains bitter extractive soluble in water and alcohol, a red coloring matter not soluble in alcohol, a volatile oil, and caoutchouc. The root is the most powerful part, but its activity is diminished and eventually destroyed by keeping; it must, therefore, be used fresh. The powder of the recently dried root acts as an emetic equal to ipecacuanha, and is very generally employed by practitioners in the country, with good advantage and success. Like other emetic substances, it promotes diaphorisis and expectoration. It diminishes the frequency of the pulse, and appears to induce drowsiness independently of the exhaustion consequent upon vomiting. In small doses it is a tonic useful in dyspepsia and fevers. It gently stimulates the digestive apparatus, and thus effects a corresponding impression on the general system.

The Chickasaw and Choctaw Indians employed it in syphilis, and considered it a specific; they used the fresh root chewed, swallowing only the juice. The latter use has been some time practised in Tennessee and Kentucky. The stem as well as the root abounds in a milky juice, which exudes when any part of the plant is wounded. Its taste is nauseous and intensely bitter. The flowers, notwithstanding, smell of honey, and produce that sweet substance. Bees and other insects collect this honey, but small flies are often caught by inserting their proboscis between the fissures of the anthers, whence it is not easy for them to extricate it; they are often seen dead in that confined situation, after unavailing

struggles. Hence one of the popular names of this plant, *Catchfly*.

The disease in which this plant has been found to be most useful is dropsy; in this, from the concurrent testimony of several eminent physicians and practitioners, its remedial powers are decided, sometimes operating as a hydragogue purgative, and at others causing the most profuse discharges of urine, and thus relieving the tissues from their morbid burden. Dr. Knapp gives the details of some cases of intermittent fever and pneumonic affections, in which he derived much benefit from this remedy employed as a diaphoretic.

When given as an emetic, the powder is to be preferred, in doses of fifteen to thirty grains; where its hydragogue or diuretic effects are desired, the best form is in decoction, made by boiling an ounce of the root in a pint of water; the dose is about a wineglass full two or three times a day. The watery extract will act on the bowels in doses of from three to five grains, but is not as efficient as the decoction.

Professor A. Curtis, M. D., of Ohio, publishes the following as the medical properties of the APOCYNUM ANDROSÆMIFOLIUM.

"Bitter, antispasmodic, relaxant, aperient, stimulant, — in one word, DEPURATING; hence, as it enables the system to clear itself and recover its tone, many have called it directly tonic. When given in large doses on a foul stomach, it vomits; in small doses, with lobelia seed, cayenne, nervine, and rolled into pills with boneset, butternut, or blackroot extract, it is one of the best articles in our practice to produce a healthy action of the liver and bowels, to break the chills in intermittents, and as one ingredient in spice bitters, woman's friend, conserve of hollyhock, &c., to be used after a course, it has few superiors. Combined with lobelia seed and cypripedium, rolled in boneset extract into a pill and given every hour, it makes an admirable compound to break up congestions, costiveness, &c., especially when aided by the bath. Used with polemonium, catnip, or sage and pennyroyal, it is an excellent hydragogue in dropsy. Even alone it has cured many cases that had defied the skill of the mineral school. Used alone, or with a little cayenne, it acts pretty thoroughly as a cathartic."

Besides the value of this plant as a therapeutic agent, it is entitled to notice for its use in the arts. The bark furnishes a fibre resembling hemp, but of a white color, and superior in strength and durability, and a decoction of the plant affords a permanent brown or black dye, according to the mordant used.

Dose as an emetic forty grains; as a diaphoretic, the same quantity with one grain of opium; as a tonic or alterant, from ten to twenty grains.

No 60.

GENTIANA LUTEA.

Yellow Gentian.

GENTIANACEÆ.

The Gentian Tribe.

No. 60.

GENTIANA LUTEA.

Yellow Gentian.

Geog. Position. Europe.
Quality. Bitter.
Power. Tonic, stomachic, anthelmintic.
Use. Rheumatism, gout, jaundice, wastings, &c.

BOTANICAL ANALYSIS.

Natural Classification.

Order GENTIANACEÆ.

Linnæan Classification.

Class V. *Pentandria.* Order *Digynia.*

Authorities. — Lin. Sp. Pl. 335. Willd. Sp. Pl. I. 1331. Woodv. Med. Bot 273. Lind. Flor. Med. 519. Raf. Med. Flor. II. 206. Whitlaw, Med. Disc. 43. Lond. Disp. 355. U. S. Disp. 358 Ec. Disp. U. S. 188. Loud. Encyc. Pl. 202. Ballard and Garrod, Mat. Med. 334. Thomson, Mat. Med. 567. Pereira, Mat. Med. II. 347. Griff. Med. Bot. 460. Carson, Illust. Med. Bot. II. 12. Gray, Bot. Text-Book, 850. Beach, Fam. Phys. 656. Kost, Mat. Med. 449. Henry, Med. Herb. 140. Wood, Class-Book, 453.

Genus GENTIANA.

From Gentius, king of Illyria, who, according to Pliny, first discovered the tonic virtues of plants of this genus.

Synonymes. — La gentiane (Fr.), Der Enzian (Ger.), La genziana (It.), La jenciana (Sp.), Gentiaan (Dutch), Baggsota (Swed.), Genciana Amarella (Port.), Goretschafka (Russ.).

The Essential Characters.

Calyx. *Sepals* four – five – ten, united at base, persistent.
Corolla. Usually regular. *Limb* divided into as many lobes as there are sepals, mostly twisted in æstivation.
Stamens. Issuing from the tube of the corolla, as many as its lobes, and alternate with them.
Ovary. One-celled, sometimes rendered apparently two-

celled by the introflexed placentæ. *Style* united into one, or wanting. *Stigma* one – two.

FRUIT. *Capsule* many-seeded.

SEEDS. Small. *Embryo* straight, with fleshy albumen.

THE SECONDARY CHARACTERS.

GENTIANA. *Calyx* five – four-parted or cleft. *Corolla* marcescent, tubular at base. *Limb* four – five-parted. *Segments* either spreading, erect, or convergent, often furnished with intermediate, plicate folds. *Stamens* five – four, inserted in the corolla tube. *Stigmas* two, revolute or erect. *Style* short or wanting. *Capsule* two-valved, one-celled, many-seeded.

Calyx four or five-cleft. *Corolla* with a tubular base, bell-form, without pores, four or five-cleft. *Stigmas* two, sub-sessile. *Capsule* one-celled, oblong. *Columellas* two, longitudinal. *Stamens* but four when the divisions of corolla are four.

THE SPECIFIC CHARACTERS.

GENTIANA LUTEA. *Stem* tall, straight. *Leaves* oval and ovate, margin smooth. *Cymes* umbellate, dense-flowered, pedunculate, axillary and terminal. *Corolla* yellow, rotate. *Segments* oblong-linear, acuminate, spreading without folds.

Leaves broad-ovate, nerved. *Corollas* about five-cleft, wheel-form, whorled.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER DIGYNIA. Monopetalous. *Stamens* inserted on corolla. *Leaves* opposite. *Juice* watery. *Capsule* one-celled.

NATURAL HISTORY.

GENTIAN is said to owe its name and introduction into medical use to GENTIUS, *King of Illyria*, who was vanquished by the Romans more than one hundred and fifty years before Christ. It is, therefore, not noticed by either Hippocrates or Theophrastus, but is mentioned by Dioscorides and by Pliny.

YELLOW GENTIAN is among the most remarkable of the species which compose this genus, both for its beauty and great comparative size. It is a perennial plant found growing on the Alps of Switzerland and Austria, the Apennines, the Pyrenees, and other mountainous or elevated regions of Europe. In Switzerland and Germany it occupies extensive tracts of ground untouched by any cattle. The root is thick, long, and cylindrical. The lower leaves are petiolate, large,

spear-shaped, stiff, and having five large veins on the back, plaited and of a yellowish-green color; those of the stem are concave, smooth and egg-shaped, sessile, and almost embracing the stem, which rises three or four feet in height. The flowers are in whorls at the upper joints, large, yellow, peduncled, and beautiful. The calyx, which is a membranous, deciduous spathe, bursts on the side when the flower opens. The corolla is rotated, divided into five or eight narrow spreading segments, elliptical, and speckled with many thick dots. The filaments are shorter than the corolla, and furnished with long, erect anthers. The germen is conical, crowned with two sessile, reflected stigmas, and becomes a conical capsule, which contains numerous small seeds.

The plant is very handsome, and often cultivated both for ornament and for the sake of its powerfully tonic virtues. Most of the species succeed well in a light, rich soil, but a few require peat, and some must be grown in pots to be protected by frames in winter. Some of them may be increased by dividing at the root, but most of them seed freely. The seeds should be sown as soon as ripe; they will then quickly vegetate; but if left till spring before they are sown, they will not come up till the second year. (*Bot. Cult.* 371.)

Gentian roots are imported from Germany; they are in pieces of various dimensions and shape, usually of considerable length, consisting sometimes of longitudinal slices, sometimes of the root cut transversely, twisted, wrinkled externally, sometimes marked with close transverse rings of a grayish-brown color on the outside, yellowish or reddish within, and of a soft spongy texture.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Gentian roots have no particular odor, and the taste is intensely bitter without being nauseous. When cut transversely, the pieces exhibit a yellow maculated heart, with thick bark verging to brown. The sensible qualities of Gentian root are extracted by ether, alcohol, and water. The two former extract a resin and a bitter extractive matter, and the latter some part of these and a considerable quantity of mucilage also, which occasions the infusion often to become ropy. Diluted alcohol is its proper menstruum. In the bitter extractive the virtues of the plant seem to reside. According to the analysis of M. M. Henry, sen., and Caventon, Gentian contains an odorous, very fleeting principle, a yellow bitter

principle, which they named *Gentianin*, a substance resembling birdlime, a greenish oily matter, a free organic acid, a saccharine principle, gum, a tawny coloring matter, and woody fibre. *Journ. de Physique*, Vol. LXXXIV. 245.

Professor Dulk of Konigsberg gives the following process for isolating the bitter principle. The alcoholic extract is macerated in water, and the solution, having been subjected to the vinous fermentation in order to separate the sugar, is treated first with acetate of lead, and then after filtration with subacetate of lead and a very little ammonia, in order to precipitate the combination of the vegetable principle with oxide of lead, care being taken not to use too much ammonia, lest by its stronger basic powers it should separate the vegetable principle from the oxide. The precipitate thus obtained is washed with a little water, then mixed with a large proportion of the same fluid, and decomposed by hydro-sulphuric acid. The liquid, having been filtered, is evaporated with a gentle heat to dryness, and the residue treated with alcohol of 0.820. The alcoholic solution being evaporated yields the bitter principle, which ought to receive the name of *Gentianin*. It is a brownish-yellow, uncrystallizable substance, having, in a high degree, the very bitter taste of the root. It is almost insoluble in absolute alcohol, but soluble in ordinary alcohol, and very soluble in water. It reddens litmus, and appears to possess acid properties.

Gentian root is tonic, stomachic, and in large doses aperient. In very large doses it is apt to load and oppress the stomach, to irritate the bowels, and even to occasion nausea and vomiting. Its use as a stomachic bitter is of a very ancient date, and is still perhaps the most generally employed of this class of medicines. Many of the complex preparations handed down from the Greeks and Arabians contain it among their ingredients, and it enters into most of the stomachic combinations employed in modern practice. It may be used in all cases of disease dependent on pure debility of the digestive organs, or requiring a general tonic impression. It has been found beneficial in dyspepsia, gout, hysteria, and jaundice. It is sometimes joined with the cinchona in intermittents, and, according as the circumstances of the cases for which it is prescribed direct, it may be combined with orange-peel, chalybeates, aromatics, squill, mineral acids, and neutral salts. On account of its antiseptic effects on dead animal matter, its powder has been used externally as an application to malignant and sloughing ulcers. The forms in which it is generally given are infusion and tincture.

Many other foreign species are employed as substitutes for yellow gentian. In this country several indigenous kinds are much given in domestic practice, and appear to be fully equal to the foreign.

№ 61.

SPIGELIA MARILANDICA,

Pink-root Worm-grass &c.

RUBIACEÆ.

Madderworts.

No. 61.

SPIGELIA MARILANDICA.

Carolina Pink-root. *Worm-grass.*

Geog. Position. United States.
Quality. Fetid, bitter.
Power. Anthelmintic, narcotic.
Use. Worms, intermittent fevers, &c.

BOTANICAL ANALYSIS.

Natural Classification.

Order RUBIACEÆ.

Linnæan Classification.

Class V. *Pentandria.* Order *Monogynia.*

Authorities. — Lin. Sp. Pl. 249. Willd. Sp. Pl. I. 824. Woodv. Med. Bot. 105. Pursh, Flor. N. A. I. 139. Lind. Flor. Med. 524. Bigelow, Med. Bot. I. 146. Barton, Veg. Mat. Med. II. 75. Raf. Med. Flor. II. 89. Whitlaw, Med. Disc. 27. Lond. Disp. 594. U. S. Disp. 699. Ec. Disp. U. S. 384. Loud. Encyc. Pl. 134. Ballard and Garrod, Mat. Med. 334. Thomson, Mat. Med. *106. Pereira, Mat. Med. II. 354. Griff. Med. Bot. 466. Carson, Illust. Med. Bot. II. 9. Gray, Bot. Text-Book, 804. Beach, Fam. Ph. 673. Howard, Bot. Med. 294. Kost, Mat. Med. 246. Wood, Class-Book, 307.

Genus SPIGELIA.

Named after Adrian Spigelius, a celebrated Professor of Anatomy at Padua; author of *Isagoge in Rem Herbarium*, who died in 1625.

Synonymes. — Spigelie de Maryland, Brimailler (Fr.), Spigelie (Ger.), Spigelia (It.).

The Essential Characters.

Calyx. *Tube* more or less adherent (superior or half superior). *Limb* four – five-cleft.
Corolla. Regular, inserted upon the calyx-tube, and of the same number of divisions.
Stamens. Inserted upon the tube of the corolla, equal in number, and alternate with its segments.
Ovary. Two- (rarely more) celled. *Style* single or partly divided.

FRUIT. Various.
SEEDS. One, few, or many in each cell.

THE SECONDARY CHARACTERS.

SPIGELIA. *Calyx* five-parted. *Segments* linear-subulate. *Corolla* narrowly funnel-form. *Limb* five-cleft, equal. *Stamens* five. *Anthers* convergent. *Capsule* didymous, two-celled, few-seeded.

Calyx five-parted. *Corolla* funnel-form. *Border* equally five-cleft. *Anthers* converging. *Capsule* twinned, two-celled, four-valved, many-seeded.

THE SPECIFIC CHARACTERS.

SPIGELIA MARILANDICA. Erect, simple, nearly glabrous. *Stem* square. *Leaves* sessile, ovate-lanceolate, acute or acuminate. *Margin* and *veins* scabrous-pilose. *Spikes* three-eight-flowered. *Corolla*, tube four times longer than the calyx. *Anthers* exserted. *Lobes of the corolla* lanceolate. *Capsule* glabrous, shorter than the calyx.

Stem four-sided. *Leaves* all opposite, sessile, lance-ovate, entire.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. *Ovary* inferior. Monopetalous. *Ovary* two or three-celled.

NATURAL HISTORY.

The PINK-ROOT, not less celebrated for its peculiar efficacy in medicine, than admired for its beauty, is a native of the Southern and Southwestern States, and has become rare as far north as Virginia. It delights in dry rich soils, on the borders of woods, and flowers from May to July. The plant is rather difficult in its cultivation. It requires to be grown in a pot, that it may be protected from frosts or too much wet. It will, however, sometimes survive the winter when planted in the open ground in a bed of peat. The best soil for it is an equal mixture of loam and peat, and young cuttings planted under a hand-glass will root readily.

The root consists of a great number of slender fibres, which are yellow. The stems are annual, numerous, somewhat four-angled, smooth, of a purplish color, and about seven or eight inches in height. The leaves are opposite, sessile, ovate-lanceolate, quite entire, smooth, and spreading. The flowers

are in a solitary spike, with small opposite bracts. The calyx consists of five awl-shaped persistent leaflets. The corolla is of a bright-red color on the outside, and deep-orange within, pentangular above, gibbous at the throat, and widening at the base, with the border five-parted. The segments are lanceolate and revolute. The stamens are five, shorter than the corolla, supporting sagittate, converging anthers. The germen is superior, with a round style, jointed below, with the upper part deciduous. The seeds are angular and rugged.

The properties of this plant were learned from the Cherokee and Creek Indians, who became acquainted with them under the name of *Unsteetla*, according to Dr. Garden, about 1723, and they were made known to the profession about 1740. These Indians collected the plant and disposed of it to the white traders. They packed it in casks, or more commonly in large bales weighing from 300 to 350 pounds. That contained in casks is to be preferred, as less liable to become damp and mouldy. In consequence of the imperfect manner in which the plant is dried, it seldom happens that packages reach the market free from dirt and mouldiness, and having the stalks of a bright color.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Pink-root is a powerful and certain anthelmintic. The whole plant is possessed of this property, but the root, being the most active, is generally employed, and this is most striking when in a fresh state, as there is no article that deteriorates more by exposure and keeping. The odor is very feeble, and the taste sweetish-bitter and unpleasant. It has been frequently analyzed by several eminent chemists and practitioners, who have found it to contain an oil, acrid resin, a bitter extractive (on which the vermifuge power is supposed to depend), tannin, gallic acid, some salts, &c.

In conjunction with its anthelmintic qualities, however, the plant also sometimes displays those of a purgative, and all its virtues have been attributed by some writers to this action; but this is erroneous, as it manifests its peculiar power on the worms, without exciting an increased action of the intestines, and hence the usual practice of prescribing a purge after the exhibition of Spigelia. It is more probable that the vermifuge qualities of the plant depend on the same principle that induces the narcotic symptoms to which it occasionally gives

rise. These are dimness of sight, giddiness, dilated pupil, spasmodic motions of the muscles of the eyes, and even convulsions. These symptoms, following the administration of SPIGELIA, have been thought to depend either on the roots of some other plant gathered with the Pink-root, or on some parasitic vine that had attached itself to it. These suggestions, however, have both been proved to be erroneous, and that the root itself is narcotic.

The use of SPIGELIA has not been confined to the expulsion of worms. As early as 1763, Dr. Garden, in correspondence with Dr. Hope, states that he had given it with great success in febrile attacks, apparently arising from a disordered condition of the stomach and bowels; this is also confirmed by Dr. Ives, and, in fact, almost every practitioner must have met with proofs of its efficacy in those febrile complaints in children, arising from irritation of the bowels from any cause. Rafinesque mentions that it is used among the Osage Indians as a sudorific and sedative in acute diseases.

As an anthelmintic, however, it is more generally prescribed than any other article in this country, and in most cases with unequivocal success, and without the production of any unpleasant symptoms. It may be given in powder or infusion, the dose of the first of which for children is from ten to twenty grains. The infusion is by far the best mode of administration; this is made with an ounce of the root to a pint of water, the dose of which is from an ounce to two ounces for a child. One of the best methods is to give a full dose at bed-time, and an active purgative in the morning, as in this way any narcotic symptoms it may display do not cause uneasiness.

The most general plan is to give it in combination, especially with *Senna*; this forms a well-known nostrum called *Worm-tea*, for which there are several recipes, differing only in the quantities of the ingredients. It usually purges actively, and does not excite narcotic symptoms. The syrup is also an efficacious form of preparation.

In the *ordinary dose* (one or two drachms for adults), SPIGELIA has very little sensible effect on the system, though it may act efficaciously as an anthelmintic. In *larger doses* it appears to operate as an irritant to the gastro-intestinal canal, and gives rise to purging, and sometimes to vomiting, though its effects in this way are very uncertain. In *poisonous doses* it operates as a cerebro-spinant or narcotic, giving rise to violent narcotic symptoms already noticed. The narcotic effects are said to be less apt to occur when the medicine purges, and to be altogether obviated by combining it with cathartics. The danger from its employment cannot be great, as it is in very general use both in regular and domestic practice, and serious consequences at present are unknown.

№ 62

VITIS VINIFERA.

Common Wine Grape.

VITACEÆ.

Grape-vines.

No. 62.

VITIS VINIFERA.

Common Grape Wine.

Geog. Position. All the temperate parts of the world.
Quality. Acrid, rather styptic.
Power. Sub-astringent.
Use. Intermittent and putrid fevers, and as a corroborant.

BOTANICAL ANALYSIS.

Natural Classification.

Order VITACEÆ.

Linnæan Classification.

Class V. *Pentandria.* Order *Monogynia.*

Authorities. — Lin. Sp. Pl. 293. Willd. Sp. Pl. I. 1180. Woodv. Med. Bot. 195. Pursh, Flor. N. A., I. 169. Lind. Flor. Med. 65. Raf. Med. Flor. II. 121. Whitlaw, Med. Disc. 38. Lond. Disp. 631. U. S. Disp. 743. Ec. Disp. U. S. 423. Loud. Encyc. Pl. 174. Ballard and Garrod, Mat. Med. 226. Thomson, Mat. Med. *81. Pereira, Mat. Med. II. 641. Griff. Med. Bot. 221. Gray, Bot. Text-Book, 765. Wood, Class-Book, 211.

Genus VITIS.

From Lat. VIEO, *to bind*, because its tendrils take hold of the neighboring plants. Or from the Celtic *Guyd*, a tree or shrub. The *G* being suppressed in pronunciation according to the usage of Celtic nations, the Latins have made of it VITIS, and the English *vine*.

Synonymes. — Raisins secs (Fr.), Rosinen (Ger.), Uva passa (It.), Passas (Sp.), Groote razynen (Dutch), Russi (Swed.), Uvas Passadas (Port.), Kishnish (Hind.), Dividetsipalava Hil (Tam.), Zabib (Arab.), Mewaz (Pers.), Zebab (Malay), Velit chamoodika ghoddid (Cyng.).

The Essential Characters.

Calyx. Minute, nearly entire, or five-toothed.
Corolla. *Petals* four – five, inserted on the outside of the disc, valvate and inflexed in æstivation, often cohering above and caducous.
Stamens. Four – five, opposite the petals, inserted on the disc.
Ovary. Superior, two-celled. *Style* one, very short.

FRUIT. A berry, globose, pulpy.
SEEDS. Bony.

THE SECONDARY CHARACTERS.

VITIS. *Petals* deciduous, cohering at the top, or distinct and spreading. *Ovary* partly inclosed within the torus, two-celled. *Cells* two-ovuled. *Stigma* sessile, capitate. *Berry* one-celled, one – four-seeded.

Calyx five-toothed, minute. *Petals* cohering at the tip, hood-like, withering. *Styles* wanting. *Stigma* obtuse, capitate. *Berry* five-seeded, globular, often diœcious. *Seeds* subcordate.

THE SPECIFIC CHARACTERS.

VITIS VINIFERA. *Leaves* cordate, sinuately five-lobed, glabrous or tomentose. *Flowers* all perfect.

Leaves sinuate-lobed, naked or downy.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Polypetalous. *Flowers* inferior, regular. *Stamens* opposite to the petals. *Shrubs*. *Stem* climbing. *Calyx* sub-entire.

NATURAL HISTORY.

The VINE is a native of Armenia, Georgia, and the Levant; but it is now found in all the temperate regions of the earth, and is cultivated with care wherever its fruit can be brought to perfection. In France, the northern limit of the vine is stated to be 50° 20′. In Thuringia, Saxony, and Siberia, it is 51°, but towards the east it is lower, for though Hungary has much wine, yet Galicia has none, and in the southern parts of the Russian empire it ascends no higher than 48°. In America the vine is cultivated in the Southern States only, extending no farther north than 38°. The limit southward in the northern hemisphere is properly 15°, but in the high mountainous island of St. Thomas, on the coast of Guinea, in Abyssinia, and in the Deccan, it is found almost under the equator. In the southern hemisphere, its southern limits are 37°. The greatest altitude, in 45° latitude, is 2460 feet; in the north of Switzerland, 1700 feet; on the Alpine range, 2000 feet; in Madeira, 2030 feet; in Teneriffe, 2500 feet; and on the Apennines and in Sicily, 3000 feet.

Its culture is supposed to have been introduced from the East, where it was cultivated, and wine made from the fruit, in the earliest ages. We are told that Noah, after coming out of the ark, planted a vineyard, and drank of the wine, and was drunken. *Gen.* ix. 20, 21. It extended into Italy about 600 years after the foundation of Rome, and thence to Burgundy in the time of the Antonines. It was introduced into Madeira from the island of Cyprus in the fifteenth century. In Great Britain the vine was cultivated before the year 731, when Bede finished his history, and although it was at one period brought to considerable perfection, yet its cultivation is now chiefly confined to the garden, and as a dessert fruit.

The vine has a slender, twisted, climbing stem, covered with a rough, peeling, fibrous bark. The leaves are lobed and sinuated, serrated, and placed alternately on long footstalks. The flowers, which appear in June and July, are small and produced in clusters, attended by tendrils. The calyx is very minute. The petals are of a greenish-white color, adherent at their apices, and soon fall off, like a little cap, from the anthers, which then spread and shed their pollen. The fruit is a succulent, globular berry, one-celled when ripe, naturally containing five seeds, but in general only two, which are hard and of an irregular form. There are many varieties of the vine; that which is called the *Alexandrian Frontignac* yields the most delicious grapes for eating, and the *Syrian* the largest bunches. This is supposed to be the sort of grape which the spies sent by Moses to examine Canaan cut down at the brook Eshcol, "a branch with one cluster of grapes, and they bare it between two upon a staff." *Num.* xiii. 23. Strabo relates, that in Margiana bunches of grapes were produced two cubits or a yard long, and in some of the Archipelago islands they weigh from thirty to forty pounds. The Syrian grape has produced in England bunches weighing nineteen pounds and a half. There is a grape cultivated in Madeira as a dessert fruit, the clusters of which sometimes weigh twenty pounds.

The VITIS VINIFERA has become naturalized in most temperate climates, but is supposed not to be indigenous to the United States. No plant in the vegetable kingdom possesses more interesting attributes, is cultivated with greater care, or has been worse perverted or abused by mankind, than the common vine. By cultivation it sports into endless varieties, differing in the form, color, size, and flavor of the fruit, and in

respect to the hardiness of its constitution. In New England its cultivation is very confined, but there are extensive vineyards in the Middle and Western States for the production of wine.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The fruit of the vine when recent and fully ripe has an agreeable, cooling, sweet sub-acid taste. It contains, besides water, sugar, mucilage, and jelly, albumen, gluten, tannin, supertartrate of potassa, tartrate of lime, phosphate of magnesia, muriate of soda, sulphate of potassa, and tartaric, citric, and malic acids; and a mucoso-saccharine principle which Chaptal and Proust regard as the constituent on which the fermentative process in bruised grapes depends.

At one time almost every part of the vine was recognized as officinal, and considered as possessed of remedial qualities, but now it is generally disused. The leaves, tendrils, and young shoots contain malic and citric acid and some bitartrate of potash; they are now principally employed in wine countries to flavor vinegar. Grapes are cooling and antiseptic, and when eaten in large quantities, diuretic and laxative. They are very useful in febrile diseases, particularly in bilious and putrid fevers, dysentery, and all inflammatory affections. In Syria the juice of ripe grapes inspissated is used in great quantity in these diseases. Grapes have been strongly recommended as an article of common diet in phthisis, and they certainly contain much bland nutricious matter well fitted for phthisical habits.

Raisins are made from the varieties named the *black raisin grape* and the *white raisin grape.* They are cured in two methods, either by cutting the stalk of the bunches half through, when the grapes are nearly ripe, and leaving them suspended on the vine till their watery part be evaporated, and the sun dries and candies them; or by gathering the grapes when they are fully ripe, and dipping them in a lye made of the ashes of the burnt tendrils, after which they are exposed to the sun to dry. Those cured in the first method are most esteemed.

Raisins differ from grapes chiefly in the quantity of saccharine matter being more abundant. They are more laxative than the fresh fruit, and are apt to prove flatulent when eaten in any considerable quantity. They are frequently used as an adjunct to some officinal preparations, but they add nothing to their efficacy.

The juice of the grape consists of principles which, when left to themselves for a short time, undergo many important reactions, and their elements assume a new arrangement, forming two new compounds, *wine* and *acetic acid.*

CAPRIFOLIACEÆ.

Honeysuckles.

No. 63.

TRIOSTEUM PERFOLIATUM.

FEVERWORT. *Wild Ipecac.*

Geog. Position. United States.
Quality. Bitter.
Power. Cathartic, tonic.
Use. Intermittent fevers, ague.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER CAPRIFOLIACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Monogynia.*

AUTHORITIES. — Lin. Sp. Pl. 250. Willd. Sp. Pl. I. 990. Pursh. Flor. N. A. I. 162. Liud. Flor Med. 445. Bigelow, Med. Bot. I. 90. Barton, Veg. Mat. Med. I. 59. Raf. Med. Flor. II. 269. U. S. Disp. 741. Ec. Disp. U. S. 404. Loud. Encyc. Pl. 170. Thomson, Mat. Med. *102. Griff. Med. Bot. 352. Gray, Bot. Text-Book, 803. Howard, Bot. Med. 296. Kost, Mat. Med. 121. Wood, Class-Book, 300.

GENUS TRIOSTEUM.

From Greek *τρεῖς, three,* and *ὀστέον, bone;* three bones, on account of its three bony seeds.

SYNONYMES. — Breitblattriger Dreystein (Ger.).

THE ESSENTIAL CHARACTERS.

CALYX. Adherent to the ovary (superior). The *limb* five- (rarely four-) cleft or toothed.
COROLLA. Tubular or rotate, regular or irregular.
STAMENS. As many, or one less than as many, as the lobes of the corolla, alternate with them, and inserted on the tube.
OVARY. Three- (rarely four or five-) celled. *Style* one. *Stigma* one – four.
FRUIT. Baccate, fleshy or dry, crowned with the persistent calyx lobes.

SEEDS. Pendulous and solitary, or numerous and attached to the axis.

THE SECONDARY CHARACTERS.

TRIOSTEUM. *Calyx* tube ovoid. *Limb* five-parted. *Segments* linear, nearly as long as the corolla. *Corolla* tubular, gibbous at base. *Limb* five-lobed, sub-equal. *Stamens* five, included. *Stigma* capitate, lobed. *Fruit* drupaceous, crowned with the calyx, three-celled, three-seeded. *Seeds* ribbed, bony.

Calyx permanent, of the length of the corolla, five-cleft, with linear divisions. *Corolla* tubular, five-lobed, sub-equal, gibbous at the base. *Stigma* capitate, sub-five-lobed. *Berry* three-celled, three-seeded.

THE SPECIFIC CHARACTERS.

TRIOSTEUM PERFOLIATUM. *Leaves* oval-acuminate, connate. *Flowers* axillary, verticillate or clustered.

Leaves oval, acuminate, connate, sub-pubescent beneath. *Flowers* sessile, whorled. *Berries* purple or yellow.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* superior. *Corolla* rotate or urn-shaped. *Seeds* in a drupe or berry. *Shrubs*, with opposite leaves, and no stipules.

NATURAL HISTORY.

The TRIOSTEUM PERFOLIATUM is a coarse, unattractive plant, growing in rocky woods. It delights in rich limestone soil, on rocky or stony ground, preferring the shade, though it is frequently found in different situations. Its range is from New England to Carolina, and probably farther. It flowers in June and July, and the seeds ripen in September.

The root is perennial, horizontal, about eighteen inches or two feet long, three quarters of an inch in diameter, and fleshy, nearly of a uniform thickness from the extremity to within two or three inches of the origin of the stems. At this place it is contorted, tuberculated, or gibbous, and of a brownish color. The color of the horizontal caudex is yellow-ochre without and whitish internally, and the fibres which proceed from it are of an ochroleucous hue. These are sometimes so large that they may be considered rather as branches or forks of the main root. The plant is from two to three feet high, and bushy, several stems arising from the same

root. In favorable situations it sometimes attains four feet in height. The stems are about three eighths of an inch in diameter, simple, stout, erect, cylindrical, hollow, pubescent, and of a green color, inversed with soft, clammy hairs. The leaves are large, oblong oval, acuminate, somewhat panduriform towards their base, where they become suddenly narrowed. They are mostly connate until they approach the fourth pair from the top; these upper ones are more attenuated at their bases and rather amplexicaul. The under surface of all the leaves is covered with a soft, dense, bluish-white pubescence, conspicuously apparent on the middle rib and nerves. On their upper surface, though the pubescence cannot be observed readily by the naked eye, it is discernible by the glass, more sparse than below. The nerves are numerous, and commonly alternate as respects their union with the costa. The two uppermost pairs of leaves are small and closely convoluted while the plant is in flower. After the florescence is past, they are developed to the full size of the others, or become rather broader at their middle, and assume a brownish-purple color; sometimes the whole plant may be of this hue, though in general it is confined to the upper portion. The flowers are axillary, sessile, and arranged in triplets round the stem, appearing whorled. The corolla is reddish-purple above, striated below with lake blended into white, and everywhere covered with a dense pubescence. It is tubular, curved, and widest at the top, where it is divided into five auriculated segments or lobes, the laciniæ being cordate and closed on each other. The lower end of the tube terminates in an abrupt gibbosity, which is articulated with the germ. The stamens are five in number, inclosed within the corolla, and alternate with the lobes or laciniæ. The pistil is somewhat longer than the stamens, and appears conspicuously above the corolla. Stigma oblong. The calyx is composed of five linear segments obscurely ciliated on their margins, of a dark purplish color, and half an inch long. The germ to which they are articulated is beneath, and garnished with a single green bract, longer and broader than the calyx leaves, and proceeding from its base. The berries succeed to the flowers, generally in the number of six to each axil; sometimes there are but three, but occasionally nine in luxuriant plants. They are ovate, orange-colored when mature, with three divisions, and contain three bony nuts or seeds.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The root of the TRIOSTEUM PERFOLIATUM is the only officinal part. When dry it is brittle and readily pulverized. The odor is nauseous and the taste bitter and unpleasant. Its active principles yield both to water and alcohol, and are retained in the extract.

Feverwort is a mild cathartic, and sometimes operates as an emetic, especially when the fresh root is given, or when the dried root is administered in large doses. It has been said on some occasions to operate as a diuretic; but Professor Barton, who observed this effect, justly remarks that this may have been only an accidental circumstance, *rhubarb* having been known by C. Piso to produce the same effect. Its operation as a cathartic is safe, mild, and thorough. It excites a motion of the bowels the nearest to the natural peristaltic motion of any purgative which has ever been discovered. It often insinuates itself through the obstructed portions of the bowels better than more powerful purgatives. In the disorders of the bowels, such as dysentery, diarrhœa, and cholera morbus, the TRIOSTEUM PERFOLIATUM is a charming remedy. It may be used in all cases where it is wished to act gently on the bowels, either alone or in combination. One of the common vulgar names of this plant, *Bastard Ipecacuanha*, indicates also the well-known emetic power which it unquestionably possesses. Shoepf speaks of it as an emetic only, and alludes to its use in intermittent fevers and pleurisy. Among the almost countless number of medicinal substances that have been employed to a greater or less extent to alleviate suffering and cure disease, perhaps there is none more valuable, or more generally applicable in the treatment of the divers diseases to which man is subject, than a safe, prompt, and efficient emetic. The safety and efficacy of *Feverwort* as an emetic, and the great number of accidents and diseases requiring a medicine of this description, entitle it, therefore, to rank high with the profession. Rafinesque mentions that the leaves of this plant are diaphoretic. They have a tendency to increase the secretions, and consequently they possess the property of raising a sweat in a considerable degree. In fevers the plant is one of the most valuable articles in the catalogue of medicines. By way of eminence it is called FEVERWORT.

The extract, which is the best mode of exhibiting TRIOSTEUM PERFOLIATUM, purges in doses of from ten to fifteen grains. Five pounds of the root are said to afford two pounds of extract. The dose of the powder is a scruple to half a drachm.

The hard seeds have been used as a substitute for coffee, and when properly prepared are a very excellent one.

№ 64.

PAPAVER SOMNIFERUM.

Poppy Garden-poppy. White-poppy

PAPAVERACEÆ.

Poppyworts.

No. 64.

PAPAVER SOMNIFERUM.

POPPY. *Garden Poppy, White Poppy.*

Geog. Position. Europe.
Quality. Somewhat bitter.
Power. Narcotic, anodyne.
Use. Pleurisy, catarrh.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER PAPAVERACEÆ.

Linnæan Classification.

CLASS XIII. *Polyandria.* ORDER *Monogynia.*

AUTHORITIES. — Lin. Sp. Pl. 729. Willd. Sp. Pl. II. 1144. Woodv. Med. Bot. 185. Pursh, Flor. N. A., II. 365. Lind. Flor. Med. 15. Raf. Med. Flor. II. 250. Whitlaw, Med. Disc. 103. Lond. Disp. 470. U. S. Disp. 549. Ec. Disp. U. S. 293. Loud. Encyc. Pl. 462. Ballard and Garrod, Mat. Med. 194. Thomson, Mat. Med. 405. Pereira, Mat. Med. II. 688. Griff. Med. Bot. 120. Carson, Illust. Med. Bot. I. 16. Gray, Bot. Text-Book, 716. Beach, Fam. Phys. 668. Wood, Class-Book, 157.

GENUS PAPAVER.

From the Celtic PAPA, which signifies *pap*, or the soft food given to children, in which the seeds were formerly boiled to make the infants sleep.

SYNONYMES. — Capsules des Pavots blancs, Opium (Fr.), Die Kopse des Weissen Mohns, Mohnsaft (Ger.), Capi del Papavero, Oppio (It.), Adormideras, Opio (Sp.), Wittamnu Hewl, Turks Heulzap (Dutch), Wallmo Opion (Swed. and Russ.), Valsnuesaft (Dan.), Affion (Turk.), Afiun (Hind.), Abinie (Tam.), Afeeoan (Arab.), Sheerkhuskah (Pers.), Ufyoon (Malay), Abim (Cyng.), Apium (Jav.), Jya-Pien (Chin.), Caruppa (Malab.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* two, rarely three, deciduous, imbricated in æstivation.
COROLLA. *Petals* four, rarely five or six, hypogynous.
STAMENS. Often wanting, but some multiple of four, rarely polyadelphous. *Anthers* innate.
OVARY. Solitary. *Style* short or wanting. *Stigmas* two, or if more, stellate upon the flat apex of ovary.

FRUIT. Either pod-shaped, with two parietal placentæ, or capsular, with several.

SEEDS. Indefinite or numerous, minute. *Embryo* minute, at the base of oily albumen.

THE SECONDARY CHARACTERS.

PAPAVER. *Sepals* two, caducous. *Petals* four. *Stamens* indefinite or numerous. *Capsule* one-celled, opening by pores under the broad, persistent stigma.

Calyx two-leaved, caducous. *Corolla* four-petalled. *Stigma* a broad disc, with radiating lines. *Capsule* one-celled, dehiscent by pores under the permanent stigma.

THE SPECIFIC CHARACTERS.

PAPAVER SOMNIFERUM. Glabrous and glaucous. *Leaves* clasping, incised, and dentate. *Sepals* glabrous. *Capsule* globose.

Calyx and *capsule* glabrous. *Leaves* clasping, gashed, glaucous.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens* twenty or more, arising from receptacle (hypogynous). ORDER MONOGYNIA. *Ovaries* compound. *Placentæ* parietal. *Sepals* two or three. *Juice* colored (except in the exotic *Chryseis*).

NATURAL HISTORY.

The somniferous or white poppy is a native of Asia, and has become naturalized in Europe and in the United States. It was well known to the ancients, and is spoken of by Homer as then cultivated in gardens, perhaps at first solely for the sake of its seed, which was used as food. It is now extensively cultivated in most of the states of Europe, not only on account of the opium, for which it is reared in Turkey, Persia, and India, but also on account of the capsules, and of the bland oil obtained from the seeds. In the United States it has seldom been grown except as an ornamental flower, but there is every reason to believe that its cultivation would prove a very lucrative branch of industry, not only from the opium that might be obtained, but also from the oil to be procured from the seeds, which is an excellent substitute for that of the olive, and is much employed to adulterate it.

PAPAVER SOMNIFERUM is an annual plant, flowering in June and July in Europe, and in February in India. The root is tapering and white; the whole plant is generally smooth, though sometimes there are a few rigid hairs on the upper part of the stem. The stem is glaucous, colored, smooth, erect, and round, somewhat branched, leafy, rising to the height of two, three, or four feet, when in a favorable situation. The leaves are large, simple, obtuse, lobed and crenated, and embracing the stem on which they are alternately placed. The flowers are large, various in color, and supported on long terminal footstalks. The calyx is formed of two smooth, ovate, bifid, concave leaves, that drop on the expanding of the petals, which are four in number, large, roundish, entire, somewhat undulated and white, occasionally of a silver-gray color, and tinged with violet at the base. The filaments are very numerous, slender, shorter than the corolla, and support erect, compressed anthers; and the germen, which is globular and smooth, is crowned with a many-rayed stigma. The capsule, which stands on a short pedicel, is globular when well grown, smooth, glaucous, from two to four inches in diameter, a little flattened at the top and bottom, and crowned with the persistent stigma, the segments of which stand erect and have an elegant appearance. The seeds are small and indefinite, white or gray, reniform, and very numerous; they escape when ripe through small openings under the points of the stigma.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

All parts of the POPPY, except the seeds (which are alimentary, and not narcotic), contain a white, opaque narcotic juice, which, however, abounds more in the capsules, and hence these are the only officinal parts of the plant. A decoction of the poppy may be made to answer many of the purposes of opium itself. In the diseases of young children it is far preferable. The leaves, stalks, and heads are all possessed of the narcotic principle. Poultices made with a decoction of this plant are exellent applications to assuage pain and allay anguish in cases of cancer, ulcers, and chronic inflammations. The poppy tea may be taken in hysterics, painful menstruation, dysentery, diarrhœa, cholera morbus, nervous headache, toothache, earache, coughs, consumption, and in general in any painful disease where there is not a high degree of inflammation and fever.

Opium is more generally used than any other remedy. It is the inspissated juice of the white poppy. The juice is a white, milky fluid, which oozes from the leaves, capsules, and stalks when they are slightly cut.

The juice of the poppy, exposed for a few days to the sun and air, thickens into a stiff, tough mass, which is opium. The best kind of opium comes from Turkey. It has a peculiar heavy, disagreeable smell, and a bitter, nauseous, acrid, and warming taste. It is of a dark-brown color, and when reduced to powder, yellow. It is compact, solid, tenacious, and when broken has a shining fracture. The best part of it comes in flat pieces, covered with large leaves and reddish capsules of a species of rumex, probably used in packing it. The round masses without the capsules adhering to them are of an inferior quality.

The East India opium is soft, ductile, and about the consistency of tar. It has something of a smoky smell, a darker color, and a more nauseous and bitter taste. It is supposed to be about half the strength of the Turkey opium.

Opium is a powerful narcotic or inducer of sleep, and an astringent. No medicine has ever been discovered at all comparable to it in moderating and relieving pain, or in promoting sleep. It is soluble in alcohol, wine, vinegar, and water, though the last two afford but weak solutions of it. Its sedative virtue resides in a principle called morphia or morphine.

A grain or two of opium taken into the stomach produces a remarkable composure of the mind, succeeded by a certain degree of languor and drowsiness; the pulse becomes slower, fuller, and softer, all the secretions are in the first instance diminished, the motion of the bowels is retarded, the thirst increased, and the mouth dried. The heat of the body appears to be increased and the senses rendered dull. In the course of three or four hours a perspiration is produced. The narcotic effect of a dose of opium lasts about eight hours, and in general a full dose of it cannot be given with safety oftener than three times in twenty-four hours. In cases of great pain and distress, it can be given much oftener and in larger doses.

The medium dose of opium is one grain, given in the form of a pill. It is often, however, given in doses of from one to three grains. It operates differently upon different individuals. In almost all diseases attended with pain, distress, and loss of sleep, opium is more or less used, and is found of essential service. In the commencement of inflammatory diseases it is deemed inadmissible, unless its use becomes unavoidable from the urgency of the pain and the entire want of sleep. It is generally used in the form of laudanum or paregoric.

№ 65

EUGENIA PIMENTA.

Allspice. Jamaica-pepper. Bayberry-tree

MYRTACEÆ.

Myrtleblooms.

No. 65.

EUGENIA PIMENTA.

PIMENTO. *Allspice, Jamaica Pepper, Bayberry-tree.*

Geog. Position. South America.
Quality. Aromatic, fragrant.
Power. Stimulant, tonic.
Use. Spice, condiment in dressing food.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER MYRTACEÆ.

Linnæan Classification.

CLASS XII. *Icosandria.* ORDER *Monogymia.*

AUTHORITIES. — Lin. Sp. Pl. 576. Willd. Sp. Pl. II. 973. Woodv. Med. Bot. 26. Lind. Flor. Med. 76. Lond. Disp. 456. U. S. Disp. 557. Ec. Disp. U. S. 270. Loud. Encyc. Pl. 416. Ballard and Garrod, Mat. Med. 279. Thomson, Mat. Med. 60. Pereira, Mat. Med. II. 529. Griff. Med. Bot. 300. Carson, Illust. Med. Bot. I. 43. Gray, Bot. Text-Book, 780. Howard, Bot. Med. 273. Wood. Class-Book, 258.

GENUS EUGENIA.

In honor of Prince EUGENE of Savoy, who was a protector and encourager of Botany, and possessed a botanic garden.

SYNONYMES. — Poivre de Jamaïque (Fr.), Nelkenpfeffer (Ger.), Pimenti (It.), Pimienta (Sp.), Jamaika pepper (Dutch), Krydd peppar (Swed.).

THE ESSENTIAL CHARACTERS.

CALYX. Adherent below to the compound ovary. The *limb* four – five-cleft, valvate.
COROLLA. *Petals* as many as the segments of the calyx.
STAMENS. Indefinite. *Anthers* introrse. *Style* and *Stigma* simple.
OVARY. Two or three-celled.
FRUIT. A berry.
SEEDS. Numerous.

THE SECONDARY CHARACTERS.

EUGENIA. Tube of the *calyx* roundish. *Limb* divided, as far as the ovary, into four segments. *Petals* as many as the lobes. *Stamens* indefinite, free. *Ovary* two or three-celled. *Cells* containing many ovules. *Berry* nearly globose, crowned by the calyx when ripe, one- (rarely two-) celled. *Seeds* one or two, somewhat rounded, large. *Embryo* spuriously monocotyledonous. *Cotyledons* very thick, combined into one mass. *Radicle* scarcely distinct, very short.

THE SPECIFIC CHARACTERS.

EUGENIA PIMENTA. *Peduncles* axillary and terminal, trichotomous-paniculate. *Flowers* four-cleft, in the forks of the peduncle, nearly sessile, others paniculate. *Leaves* oblong or oval, pellucid-dotted, somewhat opaque, smooth. *Branches* terete. *Branchlets* compressed, the younger ones as well as the pedicles pubescent.

THE ARTIFICIAL CHARACTERS.

CLASS ICOSANDRIA. *Stamens* twenty or more, arising from the calyx (perigynous). ORDER MONOGYNIA. *Leaves* opposite, not succulent. *Ovary* adherent (inferior). *Leaves* punctate.

NATURAL HISTORY.

EUGENIA PIMENTA is a native of South America, where it is called *Pumake* (in the Maypure language), and of the West India Islands and Mexico. It grows very abundantly on the hilly parts on the north side of the island of Jamaica, whence its fruit received the name of *Jamaica pepper*. It flowers in June, July, and August, and soon afterwards ripens its fruit.

The tree is beautiful and handsome, rising in height about thirty feet, straight, branching, and covered with a very smooth gray bark. The leaves, which are supported on footstalks at the ends of the twigs, are elliptical, pointed, of different sizes, but the largest are five inches long and two broad in the middle, smooth, thin, entire, shining, and of a deep-green color. The foliage in general is dense and ever-verdant, and at all times gives the tree a refreshing appearance. The flowers are produced in terminal bunches, or rather trichotomous panicles. The calyx is four-cleft. The

petals four, reflected, of a pale-green color, inclosing many longer spreading filaments of the same color, supporting pale-yellow roundish anthers. The fruit is a spherical berry, crowned with the persistent calyx; when ripe, it is black or dark purple, smooth, shining, and bilocular, with the seeds enveloped in a moist green pungent, aromatic pulp. When the berries ripen, they lose much of the aromatic warmth for which they are esteemed, and acquire a taste similar to that of juniper-berries. The tree exhales an aromatic fragrance, especially during the summer months, when it is in flower.

JAMAICA PEPPER, commonly called *allspice*, from the taste being thought to resemble a composition of all other spices, is about the size of, or somewhat larger than, a peppercorn. It is round, brown, dull, roughish, but not wrinkled, crowned with the segments of the calyx, and occasionally, though rarely, has a short pedicel. It consists of an external, somewhat hard, but brittle shell, which is paler within, and incloses two dark-brown cochleate seeds.

The plant begins to bear fruit when three years old, and arrives at maturity at seven. It grows best in a calcareous soil, covered with a light mould. The berries are gathered before being ripe, and are carefully dried on mats or terraced floors in the shade. The first day or two they are often turned, so as to be fully exposed to the sun. When they begin to dry, they are frequently winnowed, and are removed under cover at night. In ten or twelve days, or about two weeks, they become wrinkled, dry, and of a dark-brown color, and are then packed in bags or casks for sale. Some kiln-dry them, by which the same object is sooner effected. They have an aromatic, agreeable smell, and a strong, clove-like taste. The more fragrant and smaller they are, the better they are accounted.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

EUGENIA PIMENTA has an aromatic, agreeable odor, resembling that of a mixture of cinnamon, cloves, and nutmegs, with the warm, pungent taste of the cloves, qualities which reside chiefly in the cortical part of the dried berry. Water, alcohol, and ether extract its virtues. The watery infusion is of a brown color, and reddens litmus infusion. With solution of sulphate of iron, it immediately strikes a deep black color, and slowly lets fall a precipitate. Nitrate of mercury precipitates it of a yellowish brown, acetate of lead of a dirty

green, and nitrate of silver of a deep reddish-brown color. It is also precipitated by infusion of yellow cinchona bark. The sulphuric and muriatic acids redden it, and throw down pale rose-colored precipitates. The nitric acid forms no precipitate, but gives the infusion a yellow hue. The alcoholic tincture is rendered milky and slowly precipitated by water; the ethereal, when evaporated in water, deposits drops of a greenish-yellow volatile oil, a pellicle of a pungent, nauseous-tasted resin, and some extractive. Hence *Jamaica pepper* or *allspice* appears to contain a volatile oil, resin, extractive, tannin, and gallic acid. It is devoid of the fiery taste and acridity which distinguish pepper and ginger, but in other respects its effects agree with those of other spices. The volatile oil is by far the most important of its active principles, yet the resin, extractive, and tannin must contribute very considerably to its operation.

Allspice is an energetic stimulant and tonic, which is generally used as a condiment, partly on account of its flavor, and partly to promote the digestion of some kinds of food, which experience has shown are not by themselves easily or readily digested. It is frequently employed with success, and has proved useful, united with bitter substances, in dyspepsia attended with much flatulence, and in arthritic and hysterical or old rheumatic affections. The watery infusion, sweetened with sugar and the addition of a little milk, is very readily taken by children, and is an excellent cordial in malignant measles, scarlatina, confluent small-pox, and the other exanthemata when the fever assumes the typhoid type. It is also exhibited advantageously when the eruption is slow to appear, and when it is necessary to restore the strength of the patient. Its principal use in medicine is, however, to cover the disagreeable taste of other remedies, or to give them warmth. For this purpose it may be substituted for any aromatic substance.

The dose of the berries is from five grains to forty; that of the powder, ten to thirty grains; of the tincture, one to two drachms; of the oil, two to five drops.

The following are the principal preparations of this medicine, the uses of which are very limited: —

Aqua Pimentæ. *Allspice-water.* Take of the berries, bruised, half a pound, water a pint. Macerate the berries in the water for twenty-four hours, and with a sufficient quantity of water to prevent empyreuma. Distil a gallon.

Spiritus Pimentæ. *Spirit of Allspice.* Take of the berries, bruised, two ounces, proof-spirit a gallon, water sufficient to prevent empyreuma. Macerate for twenty-four hours, then distil a gallon by a gentle heat.

Oleum Pimentæ. *Oil of Allspice.* Obtained by submitting the berries, bruised, with water, to distillation.

№ 66

PUNICA GRANATUM.

Pomegranate

MYRTACEÆ.

Myrtleblooms.

No. 66.

PUNICA GRANATUM.

Pomegranate.

Geog. Position. Africa, South Europe.
Quality. Styptic.
Power. Astringent, relaxing, anodyne. *Flowers* diuretic, anthelmintic.
Use. Headache, prolapsus, worms.

BOTANICAL ANALYSIS.

Natural Classification.

Order MYRTACEÆ.

Linnæan Classification.

Class XII. *Icosandria.* Order *Monogynia.*

Authorities. — Lin. Sp. Pl. 676. Willd. Sp. Pl. II. 981. Woodv. Med. Bot. 58. Lind. Flor. Med. 74. Raf. Med. Flor. II. 254. Whitlaw, Med. Disc. 92. Lond. Disp. 531. U. S. Disp. 368. Ec. Disp. U. S. 333. Loud. Encyc. Pl. 420. Ballard and Garrod, Mat. Med. 275. Thomson, Mat. Med. 675. Pereira. Mat. Med. II. 533. Griff. Med. Bot. 294. Carson, Illust. Med. Bot. I. 45. Gray, Bot. Text-Book, 780. Kost, Mat. Med. 249. Wood, Class-Book, 258.

Genus PUNICA.

Lat. *Punica*, Carthaginian, or of Carthage, where it first grew.

Synonymes. — Le Grenadier (Fr.), Granatass felchale (Ger.), Pomo Granato (It.), Granado (Sp.), Granaatobrom (Dutch), Drzewo Granatan (Pol.), Roma (Port.), Granatnik (Russ.). Amár (Hind.), Darim (San.), Madalum pallum (Tam.), Rana (Ara.), Dalema (Malay), Deloomghedie (Cyng.), Delima (Jav.).

The Essential Characters.

Calyx. Adherent below to the compound ovary. The *limb* four – five-cleft, valvate.
Corolla. *Petals* as many as the segments of the calyx.
Stamens. Indefinite. *Anthers* introrse. *Style* and *stigma* simple.
Ovary. Two or three-celled.
Fruit. A berry.
Seeds. Numerous.

The Secondary Characters.

Punica. *Calyx* five-cleft. *Petals* five. *Berry* many-celled, many-seeded. *Seeds* baccate. *Placenta* parietal.

Calyx five-cleft, superior. *Petals* five. *Pome* or *berry* many-celled, many-seeded. *Receptacle* parietal. *Seed* berried.

The Specific Characters.

Punica granatum. Arborescent. *Leaves* lanceolate, with no marginal vein, entire, smooth.

Leaves lanceolate. *Stem* woody.

The Artificial Characters.

Class Icosandria. *Stamens* twenty or more, arising from the calyx (perigynous). Order Monogynia. *Leaves* opposite, not succulent. *Ovary* adherent (inferior). *Leaves* punctate.

NATURAL HISTORY.

The Pomegranate is a native of the South of Europe, Asia, and Barbary, but in the West Indies, where it was introduced from Europe, the fruit is larger and better flavored than in its native climates. It is a shrubby tree, and in favorable situations (its proper soil is a cretaceous one) it rises twenty feet in height, with a very unequal trunk, sending out branches from its whole length, some of which bear thorns. The leaves are opposite, about three inches long, half an inch broad in the middle, pointed at each end, entire, and of a light, lucid green color. The flowers, which stand at the end of the young branches, are large and sessile; they are three or four together, and make a fine appearance. The calyx is thick, fleshy, of a fine red color, and divided into five pointed segments. The petals are roundish and wrinkled, inserted into the upper part of the tube of the calyx, and of a scarlet color. The fruit, which is cellular, is a pulpy, many-seeded berry, the size of an orange, crowned with the calyx, which is sharply toothed, globular, and covered with a thick coriaceous rind.

When a longitudinal section of the fruit is made, the singular appearance is presented of its being unequally divided into two chambers by a horizontal diaphragm, the upper one containing from three to nine cells, and the lower three cells, with membranous partitions.

Much care is requisite for its cultivation. It requires a

rich loam, a sunny situation, and to be protected by glass. This tree grows wild upon both shores of the Mediterranean, in Arabia, Persia, Bengal, China, and Japan. It has been introduced into the East and West Indies, and is cultivated in all civilized countries where the climate is sufficiently warm to allow the fruit to ripen. In higher latitudes, where it does not bear fruit, it is raised in gardens and hot-houses for the beauty of its flowers, which may be produced double, and acquire increased splendor of coloring by cultivation.

The POMEGRANATE was very early known, being repeatedly referred to in the Bible (*Numb.* xiii. 23; *Deut.* viii. 8, &c.), and is noticed by Homer (*Odys.* vii. 120). The Romans became acquainted with it during their contests with the Carthaginians, and hence called it *Malum Punicum*, which implies that it was abundant at an early age in the neighborhood of Carthage.

Some difficulty having been experienced in comprehending the structure of this anomalous fruit, Dr. Lindley has explained it thus. Within the calyx are two rows of carpella, a lower and inner one, consisting of three or four carpella surrounding the axis and placed in the bottom of the calyx, and an upper and outer one, consisting of from five to ten carpella, surrounding the lower, but adherent to the upper part of the tube of the calyx. The two strata or tiers of cells in the Pomegranate are found by the two rows or tiers of carpella, the upper and outer row being forced to the top of the fruit by the contraction of the tube of the calyx from which they arise. The transverse diaphragm is formed by the adhesion of the upper to the lower stratum of carpella, and the outer part of the rind of the Pomegranate is formed by the calyx which contains the carpella.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The *flowers*, *rind* of the fruit, and the *bark* of the root of PUNICA GRANATUM are all officinal. The flowers, which are named *Balaustines*, are inodorous and taste bitterish. They impart a violet-red color to the saliva, and are mild astringents. The rind of the fruit, when dry, is in irregular, convex, brittle, brownish fragments, with no smell, but a bitter, astringent taste. The bark of the root and the rind of the fruit have the same sensible qualities. The bark of the root is in small pieces, of an ash-gray or yellowish color externally, yellow within, and brittle, but not fibrous. Water extracts

the virtues of both, and the solution strikes a deep bluish-black with sulphate of iron. According to Reuss (*Handb. d. Chim.*), 216 parts yield 60 of tannin, 74 of mucus, 2 of resin, 22 of oxidized tannin, and 45 of extractive.

The red succulent pulp, which is not officinal, is pleasantly acid, resembling that of the orange; it is cooling, very refreshing, useful for quenching thirst, and gently aperient. It contains much mucilage, united to a little tannin. It was formerly made into wine by the ancients; in the East it is much used for making sherbets, and is highly esteemed.

Both the rind of the fruit and the bark of the root are astringent. They are given in the form of decoction in chronic and colliquative diarrhœa, and the protracted stage of dysentery. They are supposed to prove beneficial also in checking the violent sweating which accompanies hectic fever; but the chief use of the decoction is as an injection in leucorrhœa, or a gargle in sore throats after the local inflammation is moderated.

The bark of the root has long been used by the natives of Hindostan, and, according to M. Deslandz, by the negroes of St. Domingo, as a specific in cases of tapeworm. In consequence of the recommendations of Drs. Fleming, Buchanan, and Ainslie, it was extensively experimented with in Europe, and with almost universal success. Its utility for this purpose has been fully confirmed by the experiments of Mr. Breton, Dr. Gomes of Lisbon, and Dr. Wolff of Bonn. The mode of administration is in decoction made with two ounces of the freshly dried bark to two pints of water, boiled down to a pint, of which a wineglassful is to be taken every half-hour till the whole is consumed. The action of the remedy is generally accompanied with nausea, and sometimes vomiting, purging, and even vertigo and syncope. The worm, however, is generally voided alive, a few minutes after the last dose. Celsus says it was used by the ancients for a similar purpose. M. Bourgeoise, who gave it in a great number of cases, advises that, before commencing with its administration, the patient be kept on a strict and spare diet for some days, and the evening before the medicine is taken to have his bowels well opened by means of a full dose of castor oil. If the remedy should not succeed upon the first trial, it should be repeated every day for three or four days, until the worm is discharged. Tænia is comparatively rare in this country, and the pomegranate root has been little used, possibly because the oil of turpentine in large doses has been found perfectly effectual.

The bark and flowers are sometimes given in the form of powder, in doses of a scruple increased to a drachm. A decoction may be prepared in the proportion of an ounce of the medicine to a pint of water, and given in the dose of a fluid ounce. The seeds are demulcent.

№ 67.

ARISTOLOCHIA SERPENTARIA.

Virginia Snake-root, Snake-weed.

ARISTOLOCHIACEÆ.

Birthworts.

No. 67.

ARISTOLOCHIA SERPENTARIA

VIRGINIA SNAKEROOT. *Birthwort.*

Geog. Position. North America.
Quality. Acrid.
Power. Expelling, diuretic, diaphoretic, anthelmintic, alexipharmic.
Use. Intermittents, eruptions, venomous bites.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER ARISTOLOCHIACEÆ.

Linnæan Classification.

CLASS XX. *Gynandria.* ORDER *Triandria.*

AUTHORITIES.—Lin. Sp. Pl. 1363. Willd. Sp. Pl. 159. Woodv. Med. Bot. 106. Pursh, Flor. N. A. 596. Lind. Flor. Med. 343. Bigelow, Med. Bot. III. 49. Barton, Veg. Mat. Med. II. 44. . *Raf. Med. Flor. I. 61. Whitlaw, Med. Disc.* 166. Lond. Disp. 185. U. S. Disp. 676. Ec. Disp. U. S. 77. Loud. Encyc. Pl. 766. Ballard and Garrod, Mat. Med. 375. Thomson, Mat. Med. *96. Pereira, Mat. Med. II. 241. *Griff. Med. Bot. 529.* Carson, *Illust Med. Bot. II. 32.* Gray, Bot. Text-Book, 858. Beach, Fam. Phys. 648. Howard, Bot. Med. II. 222. Kost. Mat. Med. 457. Wood, Class-Book, 465.

GENUS ARISTOLOCHIA.

From the Greek ἄριστος, *excellent*, and λόχιος, *pertaining to parturition*; the plant was considered formerly to possess considerable powers in aiding the expulsion of the placenta, and in exciting the lochial discharge.

SYNONYMES.—Serpentaire de Virginie (Fr.), Schlangenosterluzey, Virginienosterluzey, Virginische Schlanjenwurzel (Ger.), Ormrot (Swed.), Slangrod (Dan.), Wezownik Wirginianski (Pol.).

THE ESSENTIAL CHARACTERS.

CALYX. *Tube* adherent to the ovary. *Segments* three, valvate in æstivation.
STAMENS. Six–twelve, epigynous, or adhering to the base of the short and thick styles.
OVARY. Three–six-celled. *Stigmas* radiate, as many as the cells of the ovary.

FRUIT. *Capsule* or *berry* three – six-celled, many-seeded.
Embryo minute, in the base of fleshy albumen.
SEEDS. Numerous.

THE SECONDARY CHARACTERS.

ARISTOLOCHIA. *Calyx* ligulate, with an inflated base and an unequal border. *Anthers* six, subsessile upon the style. *Stigma* six-cleft. *Capsule* six-celled, many-seeded.

Calyx wanting. *Corolla* superior, one-petalled, ligulate, inflated at the base. *Capsule* six-celled, many-seeded.

THE SPECIFIC CHARACTERS.

ARISTOLOCHIA SERPENTARIA. *Stem* erect, flexuous. *Leaves* oblong, cordate, acuminate. *Peduncles* radical. *Lip of the calyx* lanceolate.

Leaves heart-form, oblong, acuminate. *Stem* zigzag, ascending. *Peduncles* radical. *Lip of the corolla* lanceolate.

THE ARTIFICIAL CHARACTERS.

CLASS GYNANDRIA. *Stamens* and *style* consolidated. ORDER TRIANDRIA. Exogens. *Herbs* or *shrubs*. *Flowers* greenish. *Stamens* six to twelve. *Stigmas* radiate.

NATURAL HISTORY.

VIRGINIA SNAKEROOT is a native of the whole middle and southern sections of the United States. It is a curious vegetable, of low growth in hedges and thickets. It flowers in May and June, and ripens its seed in September.

The root is perennial, consisting of bundles of fibres, of a yellow-ochre color, which changes to brown on drying, attached to a contorted horizontal trunk, from which several stems rise about ten inches in height, slender, crooked, and jointed, supporting on long footstalks, at each knot, thin cordate, entire, pointed, trinerved leaves, of a yellowish-green color. The flowers proceed from the joints, near the root, and stand upon long sheathed, articulated peduncles, which bend down and almost bury the flowers beneath the decayed leaves near the roots. There is no calyx. The corolla is of a brownish-purple color, globular at the base, contracted and bent in the middle, and terminating in a triangular lip. The anthers are sessile, attached to the under side of the stigma, which is roundish, divided into six parts, and almost sessile,

rising from an oblong, angular, hairy, inferior germen. The seeds are flat and contained in a six-celled hexagonal capsule.

Dried *Serpentaria-root* is brought to market in bales containing about one hundred pounds, and it is frequently mixed with the roots of the *Spigelia Marylandica*. This is an important fact, and renders great caution necessary in the purchase of snakeroot, particularly when brought from those districts in the Southern States where the Serpentaria and the Spigelia grow together in great abundance. When the stems are mixed with the roots, it is easy to detect the sophistication by the eye, but it will require a closer examination to distinguish the roots by themselves. Their appearance is very similar, and it is only by the taste that the genuineness of the snakeroot can be known.

The plant grows plentifully throughout the Middle, Southern, and Western States, abounding particularly in the valley of the Ohio, and in the mountainous regions of the interior. The root is collected in Western Pennsylvania and Virginia, in Ohio, Indiana, and Kentucky, and is brought to market often mixed with the leaves and stems of the plant, and with dirt from which it has not been properly cleansed at the time of collection.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Virginia Snakeroot has an aromatic odor, not unlike that of valerian, and a sharp, warm, bitter, pungent taste, resembling in some degree that of camphor. Water extracts all the sensible qualities of the root, affording a yellowish-brown infusion, which is not altered by sulphate of iron or zinc, nitrate of silver, oxymuriate of mercury, tartarized antimony, the mineral acids and the alkalies, nor is it precipitated by gelatine or tannin. The superacetate of lead throws down a flocculent precipitate, which is not soluble in acetic acid, showing the presence of mucus. With alcohol it affords a bright greenish tincture, which is rendered turbid by the addition of water. According to Bucholz, a German chemist, the components of Serpentaria are volatile oil .05, yellow gum resin 2.85, extractive 1.7, gummy extract 1.7, woody fibre 62.4, and water 14.55 in 1000 parts.

The analysis of M. Chevallier gave the following results: Volatile oil, a yellow bitter principle soluble in water and alcohol, resin, gum, fecula, woody fibre, albumen, and malic and phosphoric acids, partly combined with potash. The

active principles of Serpentaria therefore appear to reside in a bitter resin and an essential oil. "On distillation a white pearly fluid collects in the receiver, strongly impregnated with the aroma, but less bitter than the root. This fluid on standing deposits round the edges of its surface small crystals of camphor." *Bigelow.*

ARISTOLOCHIA SERPENTARIA is one of the most valuable and well established of our native remedies. It is much used in pharmacy, and enters into the composition of many extemporaneous preparations. The root is stimulating, diaphoretic, and tonic. It is almost entirely destitute of smell, with, at first, a sweetish taste, but afterwards hot and pungent, producing a very peculiar tingling sensation in the fauces. It is beneficially employed in typhoid and putrid fevers, whether idiopathic or accompanying the exanthemata, to excite diaphoresis, and support the powers of the system, and is found frequently to increase the efficacy of cinchona in removing protracted intermittents. It is administered with success in gangrenous affections, chlorosis, and atonic affections of the intestinal canal, and generally in all the cases in which it becomes necessary to stimulate powerfully the organs and to promote at the same time a slight diaphoresis. It is also an excellent remedy in dyspepsia, particularly when the skin is dry and parched. It must be observed, that it acts on the skin by stimulating this membrane and increasing perspiration. It is also sometimes used as a gargle in putrid sore-throat. On account of its stimulant properties, it is contra-indicated in the inflammatory diathesis, and previous to its exhibition the bowels should be well evacuated. It may be given in substance (of the powdered root the dose is from 20 to 30 grains), or in infusion (which is almost always preferred), made by macerating half an ounce of the bruised root in a pint of boiling water in a covered vessel for two hours, and straining. This is the ordinary form in which Serpentaria is employed. The dose is one or two fluid ounces, repeated every two hours in low forms of fever, but less frequently in chronic affections. Decoction is a bad form of preparation of Serpentaria, as the boiling dissipates the essential oil on which much of the virtue of the remedy depends.

The wide range of country over which ARISTOLOCHIA SERPENTARIA is to be found will render the plate particularly useful, as it will enable the practitioner and apothecary to detect this well-characterized species in almost every forest of the Middle, Western, and Southern States.

As met with in the shops, it consists of a tuft of long, slender yellowish or brownish fibres, attached to a long, contorted head or caudex. The odor is aromatic, the taste warm and bitter.

№ 68.

IPOMÆA JALÁPA.

Jalap.

CONVOLVULACEÆ.

Bindweeds.

No. 68.

IPOMÆA JALAPA.

JALAP.

Geog. Position. South America.
Quality. Nauseous, acrid.
Power. Active cathartic.
Use. Cold habits, worms in children.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER CONVOLVULACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Monogynia.*

AUTHORITIES. — Willd. Sp. Pl. 860. Pursh. Flor. N. A. 146. Lind. Flor. Med. 396. Raf. Med. Flor. I. 122. Whitlaw, Med. Disc. 28. Lond. Disp. 299. U. S. Disp. 420 Ec. Disp. U. S. 224 Loud. Encyc. Pl. 138. Ballard and Garrod, Mat. Med. 339. Thomson, Mat. Med. 877. Pereira, Mat. Med II. 343 Griff. Med. Bot. 474. Carson, Illust Med. Bot. II. 13. Gray, Bot. Text-Book, 846. Beach, Fam. Phys. 651. Kost, Mat. Med. 180. Wood, Class-Book, 441.

GENUS IPOMÆA.

From Greek ἶψ, *vine* or *twining*, and ὁμοῖος, *like*, from its resemblance in appearance and habit.

SYNONYMES. — Jalap (Fr.), Jalappenharz (Ger.), Scialappa (It.), Jalapa (Sp.), Jalapparot (Swed.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* five, much imbricated, usually united at base, persistent.

COROLLA. Regular. *Limb* five-lobed or entire, plaited and twisted in æstivation.

STAMENS. Five, inserted into the base of the corolla and alternate with its lobes.

OVARY. Two – four-celled, free. *Styles* united into one.

FRUIT. *Capsule* two – four-celled, valves with septifragal dehiscence.

SEEDS. Few, large, with mucilaginous albumen. Cotyledons foliaceous or wanting.

THE SECONDARY CHARACTERS.

IPOMÆA. *Sepals* five. *Corolla* campanulate. *Stamens* included. *Style* one. *Stigma* two-lobed, the lobes capitate. *Ovary* two-celled. *Cells* two-seeded. *Capsule* two-celled.

Calyx five-cleft, naked. *Corolla* funnel or bell form, with five folds. *Stigma* globe-headed, papillose. *Capsule* two or three-celled, many-seeded.

THE SPECIFIC CHARACTERS.

IPOMÆA JALAPA. *Roots* tuberose, incrassated, perennial. *Stems* annual, twining, branched, smooth. *Leaves* ovate, acuminate, cordate at the base, quite entire, and smooth on both sides. *Peduncles* one to three-flowered. *Sepals* unequal, obtuse, smooth. *Corolla* salver-shaped, with a subclavate, cylindrical tube, and a subpentagonal, horizontally expanded limb. *Stamens* exserted.

Leaves ovate, obscurely obtuse, spreading, villose underneath. *Peduncles* one-flowered.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* rarely shrubby. *Stamens* alternate with petals. *Fruit* capsule or berry. *Cells* with one or two seeds. *Corolla limb* entire.

NATURAL HISTORY.

This species of CONVOLVULUS is a native of South America, taking its name from *Jalapa*, a city of Mexico in Vera Cruz, in the neighborhood of which it grows, at a height of about six thousand feet above the level of the sea. Jalapa is the only market for the root, whence it is exported by the way of Vera Cruz. It might probably be cultivated in the southern section of the United States. It delights in rich, light soil, and young cuttings root freely in sand under a hand-glass. It flowers in August and September.

The root is perennial, of an irregular egg-shape, and a dark, almost black color on the outside, ponderous, large, and when fresh abounding with a milky juice. It sends up many trian-

gular, twining, twisted stems, which extend upwards of ten feet, with smooth petiolated leaves, of a bright-green color, varying in shape, some being cordate, others angular, and a few oblong and pointed. The flowers are on short, axillary peduncles, that send off two pedicels, each bearing a large bell-shaped, entire, plaited flower, of a reddish color externally, and a dark purple within, with a calyx composed of five oval, concave, pale-green leaves, somewhat indented at their points. The anthers are of a yellow color, large, on slender, short filaments; the style is shorter than the filaments, and the germen oval. The seeds are bristled.

The dried roots found in commerce rarely exceed a pound each in weight. They vary in size from that of the fist to that of a nut. When entire, they are usually more or less oval and pointed at the two opposite extremities. The larger roots are frequently incised, apparently to facilitate desiccation. They are covered with a thin brown, wrinkled cuticle. They should be heavy, hard, and difficult to powder. When broken, good jalap roots should present a deep yellowish-gray color, interspersed with deep brown concentric circles. The slices vary in their shape, color, and other properties. Those of inferior quality are light, whitish, and friable. The sliced tubers are liable to be adulterated, which is sometimes done with slices of briony root; but the fraud is easily discovered by the spongy texture and whiter color of the latter, and its burning less readily when applied to the flame of a candle.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Good Jalap root has a sweetish, heavy odor when broken, and a sweetish, slightly pungent taste. It is heavy, compact, hard, brittle, with a shining, undulated fracture, exhibiting numerous resinous points distinctly visible with the microscope. It is always kept in the shops in the state of powder, which is of a yellowish-gray color, and when inhaled irritates the nostrils and throat, and provokes sneezing and coughing. It yields its active properties partly to water, partly to alcohol, and completely to diluted alcohol. M. Cadet de Gassicourt obtained from five hundred parts of jalap twenty-four of water, fifty of resin, two hundred and twenty of gummy extract, twelve and a half of fecula, twelve and a half of albumen, one hundred and forty-five of lignin, sixteen and three tenths of saline matters, two and seven tenths of silica, with a loss of seventeen parts. The resin of jalap consists of two

portions, one of which, amounting to seven parts out of ten, is *hard* and insoluble in ether, the other is *soft* and soluble in that menstruum. The proportion of resin to the other ingredients of the root varies in different specimens.

Ipomæa Jalapa is a stimulant cathartic, acting briskly on the bowels, and although occasionally griping severely, yet safe and efficacious. It is used in the same cases as scammony, to which it is closely allied, not only by its effects, but also by botanical affinities and chemical properties. Whenever it is required effectually to evacuate the intestines, it is tolerably certain in its operation, more so, indeed, than many other purgatives. In the proper dose it may be given without the least hesitation to children, in any case requiring an active purge. It has an advantage over some other evacuants, that it does not stimulate or heat the system, its effects being confined principally to the alimentary canal, the peristaltic motion, secretions, and exhalations of which it promotes, and constipation less frequently succeeds its use than of some other purgatives.

Daily experience, in fact, proves the value of *jalap* as an active, certain, and safe purgative in various diseases both of children and adults. Of course its irritant properties unfit it for exhibition in inflammatory affections of the alimentary canal, as well as after surgical operations about the abdomen and pelvis. Also it is not an appropriate purgative in irritation of or hemorrhage from the uterus, or in piles and stricture and prolapsus of the rectum. On the other hand, its use is indicated in torpid and overloaded conditions of the intestinal canal, as well as in constipation attended with retention of the catamenia. When the object is to relieve cerebral congestion and dropsical affections by a counter-irritant influence on the mucous membrane, *jalap* is well adapted to fulfil it. "*Jalap*," says Bremser, "is, without contradiction, in verminous diseases one of the best purgatives, and which perhaps possesses at the same time greater anthelmintic virtues than any other."

Jalap is apt to be attacked by worms, which, however, are said to devour the amylaceous or softer parts, and to leave the resin, so that the worm-eaten drug is more powerfully purgative than that which is sound. Thus, out of 397 parts M. Henry obtained 72 parts of resin, while from an equal quantity of the latter he procured only 48 parts. Hence worm-eaten jalap should be employed for obtaining the resin, but should not be pulverized, as it would afford a powder of more than proper strength.

The dose of jalap in powder is from fifteen to thirty grains, of the resin or alcoholic extract from four to eight grains. The latter is usually given rubbed up with sugar, or in emulsion.

N° 69.

Hydrastis Canadensis.

Turmeric root Golden seal.

RANUNCULACEÆ.

Crowfoots.

No. 69.

HYDRASTIS CANADENSIS.

TURMERIC-ROOT. *Golden Seal, Yellow-root, Orange-root.*

Geog. Position. United States.
Quality. Bitter taste, narcotic odor.
Power. Tonic, stomachic.
Use. Aids digestion, removes obstructions.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER RANUNCULACEÆ.

Linnæan Classification.

CLASS XIII. *Polyandria.* ORDER *Polygynia.*

AUTHORITIES. — Lin. Sp. Pl. 784. Willd. Sp. Pl. 1340. Pursh, Flor. N. A. 389. Lind. Flor. Med. 3. Barton, Veg. Mat. Med. II. 17. Raf Med. Flor. I. 40. U. S. Disp. 1335. Ec. Disp. U. S. 213. Loud. Encyc. Pl. 490. Thomson, Mat. Med. *77. Griff. Med. Bot. 82. Gray, Bot. Text-Book, 704. Beach, Fam Phys. 657. Howard, Bot. Med. 255. Kost, Mat. Med. 448. Wood, Class-Book, 137.

GENUS HYDRASTIS.

From the Greek ὕδωρ, *water*, the plant growing in watery places. Or to commemorate "a young lady of noble birth."

SYNONYMES. — Hydraste (Fr.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* mostly five, sometimes three, four, or six, mostly deciduous, and imbricated in æstivation.

COROLLA. *Petals* three – fifteen, hypogynous, sometimes irregular or wanting.

STAMENS. Indefinite or numerous, distinct, hypogynous. *Anthers* adnate or innate.

OVARY. Indefinite or numerous, rarely solitary or few, distinct, seated on the torus.

FRUIT. Either dry achenia or baccate or follicular.

SEEDS. Numerous. *Embryo* minute, at the base of horny or fleshy albumen.

THE SECONDARY CHARACTERS.

HYDRASTIS. *Sepals* three, ovate, petaloid, equal. *Corolla* wanting. *Stamens* indefinite or numerous, a little shorter than the sepals. *Baccate fruit* composed of numerous, aggregate, one-seeded acines.

Petals three, ovate (by some considered a colored calyx). *Berry* composed of one-seeded acines.

THE SPECIFIC CHARACTERS.

HYDRASTIS CANADENSIS. *Root* of a deep yellow color internally. *Stem* six–nine inches high, becoming purplish, hairy above. *Leaves* two only, alternate on the upper part of the stem, petiolate, emarginate at base, palmate with three–five lobes. *Peduncle* terminal, solitary, one-flowered. *Sepals* reddish white. *Fruit* red, juicy. *Seeds* nearly black.

Stem with two opposite leaves above. *Leaves* petioled, emarginate at the base, palmate, serrate, gashed. *Peduncle* terminal, solitary, one-flowered. *Root* yellow.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens* twenty or more, arising from the receptacle (hypogynous). ORDER POLYGYNIA. *Leaves* never peltate. *Herbs* with acrid, colorless juice.

NATURAL HISTORY.

The HYDRASTIS CANADENSIS is peculiar to North America. It was originally included by Linnæus in HYDROPHYLLUM, but afterwards separated under its present name, at the suggestion of his industrious correspondent, Mr. John Ellis, to whom we are indebted for the generic name HYDRASTIS, which has been adopted by all botanists, except P. Miller, F. B. S., who, in his Gardener's Dictionary, terms it *Warnera*. Another species has been described by Walter under the name of *Hydrastis Carolinensis;* but as it has not since been detected, it is probably nothing more than a local variety of this one. Dr. Muhlenberg has also introduced it in his catalogue, but with the doubtful mark.

The Hydrastis is found in most parts of the United States, being most common to the west of the mountains. It may

be occasionally found in the New England States, but not common. Small quantities have been collected in Vermont and Connecticut, but it is very rare in Massachusetts. It is very abundant westward of the Alleghany Mountains, and may be found everywhere in Kentucky, Indiana, and Ohio. It grows in rich woodlands, deep valleys, and on the banks of streams. It is occasionally noticed in Pennsylvania springing up at the base of hills, and generally on their northern side; near Philadelphia it is very rare. The flowers are exceedingly fugacious, the petaloid sepals falling off soon after they expand; they appear in April and May, and are succeeded by the bright red fruit, which closely resembles a raspberry, but is not edible.

Some botanists have thought it probable that the name HYDRASTIS had a reference to the natural situation of the plant, from *ὕδωρ, water*, or *ὑδρεία, an imbibing of water.* It is extremely doubtful, says Professor Barton, whether this was really the derivation of the word, for the plant, as far as any thing of its natural history is known, is neither remarkable for imbibing nor for growing in the vicinity of water; neither does it appear to delight in a very moist soil, for where it is found in the greatest abundance, and where it grows most in profusion, it is confined altogether to shady woods of rich soil.

The root is perennial, of a bright yellow color, tortuous and rugged, from which proceed a great number of tolerably large fibrous portions. The fibres are rather more brilliant than the root. Stem simple, upright, pubescent or hairy, especially in the young state of the plant. It is terminated with two unequal leaves, beyond the smaller of which the peduncle projects, bearing a single white or very pale rose-colored flower. The leaves are at first small during the florescence, but increase rapidly in size as the plant advances to maturity. The fruit is a berry, of a bright red color, consisting of a number of muriated acini, each of which contains one or two obovate seeds of a black color, having a minute embryo at the base of a fleshy and oily albumen.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

No analysis of HYDRASTIS CANADENSIS has been made, nor are its medicinal properties fully known, though from various

trials and experiments of several eminent physicians and practitioners it may very safely be recommended as a strong tonic bitter, and may be used wherever such a remedy is required. It has a pleasantly bitter and somewhat pungent taste, is slightly laxative, and of course alterant, aiding the system to remove obstructions and recover its tone, and is highly esteemed and thought valuable throughout the United States. It keeps the bowels moderately open, without acting as a purgative or reducing the strength of the patient. It is highly useful during recovery from fevers, for dyspeptics, or those who are troubled with indigestion, or any other complaint, to remove the heavy, disagreeable sensation often produced by indigestible food. A teaspoonful of this root pulverized, taken in a little hot water, sweetened, with the addition of a little cayenne, will give immediate relief from the distress caused by unhealthy food in the stomach. When used directly after eating, it aids digestion and removes heaviness from the stomach. A small particle of this powder, the size of a pea, will remove the inquietude.

Golden Seal is an excellent corrector of the bile, and may be used for that purpose. It is very good in jaundice, and in all derangements of the digestive organs. In colic, also, it may be used with exceeding good effect. Compounded with poplar-bark, one part of the former and two of the latter, four parts of good sugar, and one eighth part cayenne, it forms a compound that is valuable in every family, where it should be always at hand.

Turmeric-root is very popular and much used in some of the Western States in form of an infusion as a topical application in chronic ophthalmia and other diseases of the eye, and there is evidence sufficient of its efficacy in these complaints. The Indians are said to have employed it in the same form for old sores, and as an external application to ulcers. It is likewise highly probable that it may be found useful in many external complaints as a topical tonic.

A strong decoction of Hydrastis Canadensis and poplar-bark, with one tenth as much powdered peach-kernels, and one tenth of strong tincture of myrrh, with an equal measure of dry sugar, make an excellent dysentery or cholera syrup.

This plant was well known to and extensively used by the Indians, both as a dye and for medicinal purposes. The root yields a brilliant yellow color, which appears to be permanent and might be advantageously employed in the arts. In an account of the principal dyes used by the Indians, by Hugh Martin, in the third volume of the *Trans. Amer. Phil. Soc.* 1783, he states that, from experiments made by himself and others, it was found to succeed perfectly with silk, wool, and linen, and by the addition of indigo to furnish a handsome rich green.

No 70.

Humulus lupulus.

Common Hop.

URTICACEÆ.

Nettleworts.

No. 70.

HUMULUS LUPULUS.

Common Hop.

Geog. Position. Europe, North America.
Quality. Bitter.
Power. Tonic, narcotic, anodyne.
Use. The *strobiles*, in nephritis, phrenitis. The *seeds*, in constipation.

BOTANICAL ANALYSIS.

Natural Classification.

Order URTICACEÆ.

Linnæan Classification.

Class XXII. *Diœcia.* Order *Pentandria.*

Authorities. — Lin. Sp. Pl. 1457. Willd. Sp. Pl. 769. Woodv. Med. Bot. 90. Pursh. Flor. N. A. 199. Lind. Flor. Med. 296. Bigelow, Med. Bot. III 164. Raf. Med. Flor. I. 246. Whitlaw, Med. Disc. 185. Lond Disp. 377. U. S. Disp. 388. Ec. Disp. U. S. 211. Loud. Encyc. Pl 834. Ballard and Garrod, Mat. Med. 386. Thomson, Mat. Med. 461. Pereira, Mat. Med. II. 205. Griff. Med. Bot. 574. Gray, Bot. Text-Book, 884. Beach, Fam. Phys. 658. Howard, Bot. Med. 254. Wood, Class-Book, 508.

Genus HUMULIS.

From Lat. humus, *fresh earth;* the hop grows only in rich soils. The English word *hop* seems to be the Anglo-Saxon *hoppan*, to climb.

Synonymes. — Houblen (Fr.), Der Hopfen (Ger.), Lupolo (It.), Hombrecillo (Sp.), Hoppe (Dutch), Lupulo (Port.), Chmiel (Pol.), Chmel (Russ.), Baruce (Indian), Hymel (Pers.).

The Essential Characters.

Calyx. Membranous, lobed, persistent.
Corolla. None.
Stamens. Definite, distinct, inserted into the base of the calyx and opposite its lobes.
Ovary. Free, simple, one-ovuled. *Style* one.

FRUIT. Achenium or utricle, surrounded by the membranous or fleshy calyx.
SEEDS. Not numerous.

THE SECONDARY CHARACTERS.

HUMULUS. *Calyx* five-sepalled. *Stamens* five. *Anthers* with two pores at the summit. *Bracts* imbricate, large, entire, concave, persistent, one-flowered. *Calyx* membranous, entire, persistent. *Styles* two. *Achenium* invested by the thin calyx.

STAMINATE FLOWERS. *Calyx* five-leaved. *Corolla* none. *Anthers* with two pores at the extremity. PISTILLATE FLOWERS. *Calyx* one-leaved, entire, oblique, spreading. *Styles* two. *Seed* one within the leaf, like calyx. *Inflorescence* strobile-form.

THE SPECIFIC CHARACTERS.

HUMULUS LUPULUS. *Stem* long, annual, rough backwards with reflexed prickles. *Leaves* very rough, generally three-lobed, deeply cordate at base, on long stalks. *Flowers* of the barren plants extremely numerous, panicled, greenish. *Flowers* of the fertile plants in aments with large scales.

Stem twining with the sun. *Leaves* lobed.

THE ARTIFICIAL CHARACTERS.

CLASS DIŒCIA. *Stamens* apart from the pistils in different flowers upon different plants. ORDER PENTANDRIA. *Herbs* exogens, diœcious. *Fruit* a utricle or achenia. *Styles* two. *Leaves* rough (often with stings), stipulate. *Flowers* inconspicuous.

NATURAL HISTORY.

In England the hop is an indigenous plant, perennial, growing in hedges, and flowering in July. Throughout the United States it is found wild in hedges, &c., and is extensively cultivated for the sake of its fertile aments, which are chiefly used as a preservative in malt liquors.

The root sends up many long, striated, angled, rough, flexible stems, which support themselves by twining round upright bodies in a spiral direction from left to right. The leaves are opposite, in pairs, petiolate, heart-shaped, serrated, entire or lobed, and of a dark-green color on the upper disc. Both the leaves and petioles are scabrous, with minute prickles, and at the base of each leafstalk are two interfoliaceous, entire, reflected, smooth stipules. The flowers are axillary,

and furnished with bracteas; the males are yellowish-white, in panicles, and drooping; the females, which are on distinct plants, are in solitary cones or strobiles, ovate and pendulous, composed of membranous scales of a pale greenish color, tubular from being rolled in at the base, and two-flowered, each containing one round, flattish seed, of a bay-brown color, surrounded with a sharp rim, and compressed at the tip.

At the proper season, while the strobiles are yet scarcely ripe, the plants are cut about three feet from the ground, the poles on which they are twined pulled up, and the strobiles carefully picked off one by one. Those that are overripe or defective are separated from those that are ripe enough, and both kinds are carried to the kiln as soon as possible after they are picked. The heat of the kiln requires to be regulated with great nicety, and in order to prevent them from drying too fast, many kilns have two floors, on the uppermost of which the greener hops are laid, and gradually dried, before being brought to support the heat of the lower floor. Charcoal is the fuel usually employed, other kinds of fuel injuring the flavor of the hops. The strobiles are considered sufficiently dry when they become crisp, but they acquire a degree of toughness and tenacity before they are bagged, from being laid in heaps in the storehouses. Five pounds of moist or underripe hops make one pound only when taken from the kiln. The best hops are brought to market in fine canvas sacks, called "pockets," each of which contains somewhat more than one hundred-weight of hops.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Hops have a strong, peculiar, fragrant, subnarcotic odor, and a very bitter, aromatic, astringent taste. They have a pale, greenish-yellow hue, appear like thin, transparent, veined leaves, and although not tough, they are difficult to pulverize.

Some late experiments by Dr. A. W. Ives, of New York, prove that the active properties of the strobiles of the hop reside in a substance which forms one sixth part only of their weight, and which is easily separated by merely sifting in a fine sieve. Dr. Ives has named it *Lupulin*. He found in 120 grains of lupulin five grains of tannin, ten of extractive, eleven of bitter principle, twelve of wax, thirty-six of resin, and forty-six of woody fibre (lignin). Hops from which all the lupulin is separated yield an extract which possesses

none of the virtues of the hop. (*Annals of Phil.* p. 194.) The virtues of the strobiles are extracted by boiling water, or alcohol, or ether. The watery infusion has a pale straw-color, is rendered muddy by the mineral acids; alkalies deepen its color; it strikes an olive with sulphate of iron, is precipitated by alcohol, solution of superacetate of lead, nitrate of silver, and tartarized antimony, and when rubbed with magnesia or lime, a rod dipped in muriatic acid discovers the presence of ammonia. The ethereal tincture, when evaporated in water, leaves a pellicle of greenish, intensely bitter resin, and deposits some extractive. By distillation in water, hops yield a volatile, aromatic oil. From these experiments they appear to contain resin, extractive, volatile oil, tannin, an ammoniacal salt, and what has been termed the bitter principle.

Humulus Lupulus is narcotic, tonic, diuretic, and, externally applied, anodyne and discutient. Hops are said to possess the power of procuring sleep in the delirium of fever, and in mania, when used as a pillow, and owing to this effect having been confirmed in the case of King George the Third of England, their efficacy as a general narcotic when introduced into the stomach has been investigated. Dr. Maton observed, that, besides allaying pain and producing sleep, the preparations of hops reduce the frequency of the pulse, and increase its firmness in a very direct manner. One drachm of the tincture and four grains of the extract given once in six hours. He found the extract exceedingly efficacious in allaying the pain of articular rheumatism, but subsequent experience has not afforded sufficient proof of its utility as a sedative, and Dr. Bigsby's experiments have lessened very much the confidence physicians were previously disposed to give to it. An ointment compounded with the powder of the hop and lard is recommended as an anodyne application to cancerous sores. A fomentation of it will certainly afford much relief in painful swellings and tumors.

When administered internally, all the good effects of hops may be obtained by the use of Lupulin, which is best given in pills, in doses of six to ten grains, or in tincture in those of half a drachm to a drachm. The pills may be made by simply rubbing the powder in a warm mortar till it acquires the consistence of a ductile mass, and then moulding it into the proper shape. Lupulin may be likewise substituted for the hops in poultices, ointments, &c., with much advantage.

The principal consumption of hops is in the manufacture of malt liquors, to which they communicate the bitter flavor and tonic properties.

The young shoots of the Humulus Lupulus, when they have risen three or four inches from the root, are sometimes gathered and boiled like asparagus, to which they are very little inferior; these shoots are usually called *hop-tops*.

Nº 71.

Conium Maculatum.

Hemlock.

UMBELLIFERÆ.

Umbellifers.

No. 71.

CONIUM MACULATUM.

Hemlock.

Geog. Position. Europe.
Quality. Nauseous.
Power. Narcotic, diuretic.
Use. Scirrhus, scrofula, ulcers, scabies, &c.

BOTANICAL ANALYSIS.

Natural Classification.

Order UMBELLIFERÆ.

Linnæan Classification.

Class V. *Pentandria.* Order *Digynia.*

Authorities.—Lin. Sp. Pl. 349. Willd. Sp. Pl. 1395. Woodv. Med. Bot. 104. Pursh. Flor. N. A. 195. Lind. Flor. Med. 57. Bigelow, Med. Bot. I. 113. Raf. Med. Flor. I. 148. Whitlaw, Med. Disc. 46. Lond. Disp. 295. U. S Disp. 273 Ec. Disp. U. S. 135. Loud. Encyc. Pl. 216. Ballard and Garrod, Mat. Med. 290. Thomson, Mat. Med. 453. Pereira, Mat. Med. II. 497. Griff. Med. Bot. 339. Carson, Illust. Med. Bot. I. 49. Gray, Bot. Text-Book, 800. Wood, Class-Book, 283.

Genus CONIUM.

From the Greek *κώνειον*, from *κῶνος*, *a cone* or *top*, so called because it produced giddiness in those who drank it. It is the Greek name for Poison Hemlock.

Synonymes. — La cigue (Fr.), Der Schierling (Ger.), Cicuta (It.), Ceguda (Sp.), Scheerling (Dutch), Skarntyde (Dan.), Swinicwesz (Pol), Boligolow (Russ.).

The Essential Characters.

Calyx. Adhering to the ovary, entire or five-toothed.
Corolla. *Petals* five, usually inflected at the point, imbricate in æstivation.
Stamens. Five, alternate with the petals, and inserted with them upon the disc.
Ovary. Inferior, two-celled, surmounted by the fleshy disc which bears the stamens and petals. *Styles* two, distinct, or united at their thickened base. *Stigma* simple.

FRUIT. Dry, consisting of two coherent carpels, separating from each other by their faces (*commissure*) into two halves (*merocarps*).

THE SECONDARY CHARACTERS.

CONIUM. *Calyx* margin obsolete. *Petals* obcordate, with an acute, inflected point. *Fruit* ovate, laterally compressed. *Carpels* with five acute, equal, undulate-crenulate ribs, lateral ones marginal, intervals without vittæ. *Seeds* with a deep, narrow groove on the face.

Seeds five-ribbed. *Ribs* at first crenate, with flat intervals between them. *Germ* ovate, gibbous. *Perianth* entire. *Petals* unequal, cordate, inflexed. General *involucre* about three to five-leaved. Partial *ones* mostly three-leaved, unilateral.

THE SPECIFIC CHARACTERS.

CONIUM MACULATUM. *Stem* spotted. *Leaves* tripinnate. *Leaflets* lanceolate, pinnatifid. *Fruit* smooth.

Stem very branching, spotted. *Leaves* very compound. *Seeds* striate.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER DIGYNIA. Polypetalous. *Seeds* two. *Flowers* in umbels. *Herbs* with hollow stems.

NATURAL HISTORY.

CONIUM MACULATUM is usually supposed to be the *κώνειον* of the Greek writers, the celebrated *Athenian state poison*, by which Socrates and Phocion died, and the *cicuta** of the Roman authors. It is a native of Europe and parts of Asia, and is naturalized in many places in the United States. The plant is biennial and umbelliferous, growing under hedges, by road-sides, and among rubbish, flowering in June and July.

The root, which is fusiform, branching, whitish, and fleshy, exudes when cut a milky juice. The stem rises erect about four or five feet in height, is branching and leafy, round, hollow, striated, smooth, shining, and maculated with brownish purple. The lower leaves are very large, above a foot in length, on large sheathing petioles, supra decompound, and shining; the upper leaves are bipinnate; the whole stand upon channelled footstalks proceeding from the joints of the stem, are incised, smooth, of a deep green color on the upper

* A Latin name used by Virgil (Ec. 2d and 5th), but of unknown application.

surface, but paler underneath. The rays of the umbels are ten or twelve, those of the umbellules fifteen or sixteen. The involucre consists of from three to seven short, turned-down, lancet-shaped leaflets with white edges spread at the base, the involucel of three or four leaflets on one side only, and spreading. The flowers are very small, the petals white, the outer ones rather longer than the inner, cordate, inflected. The stamens the length of the petals, supporting white orbicular anthers. The styles two, filiform, diverging, and crowned with round stigmas. The fruit is ovate, striated, smooth, and brownish when ripe.

Hemlock is distinguished from other umbelliferous plants with which it may be confounded by its *large and spotted stem*, the dark and *shining color of its lower leaves*, and their *disagreeable smell* when fresh and bruised, resembling in some degree the urine of a cat.

For medical use, the leaves should be gathered about the end of June, or early in July, when the plant is in flower, the small leaflets picked off, and the footstalks thrown away. The picked leaflets are then to be properly dried, and as exposure to the air and light destroys the fine green color of the plant, and injures its active qualities, the dried leaflets must be preserved in boxes completely filled by gently pressing down the leaves, then covered with a closely fitted lid, wrapped in paper, and sealed; or if powdered, the powder may be preserved good in closely-stopped opaque phials for many years.

As powders are generally affected by the action of the air and light, all powders should be kept in opaque or green glass bottles. The effect of light on a majority of powders is rendered obvious by the labelled side of clear bottles containing them, which are always turned to the light, becoming incrusted with the powder, changed in its color, while the other side remains clear and transparent.

According to Linnæus, sheep eat the leaves, but horses, cows, and goats refuse them. Ray informs us that the thrush will feed upon the seeds, even when corn or grain is to be had. Curtis says hemlock is eaten by few or no insects.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The odor of properly dried hemlock leaves is strong, heavy, and narcotic, but not so disagreeable as that of the fresh

leaves; the taste is slightly bitter and nauseous. They are easily pulverized, and the powder should retain the beautiful green color of the leaves. The acrimony only of the fresh leaves is lost in drying, but the narcotic principle remains uninjured if the operation be well performed. The virtues of CONIUM MACULATUM are extracted by alcohol and sulphuric ether. To the ether it communicates a very deep green color, and when the tincture is evaporated on the surface of water a rich dark green resin remains, in which the narcotic principle of the plant appears to reside; it contains the odor and taste in perfection, and half a grain produces headache and a slight vertigo. Dr. A. T. Thomson discovered this principle, to which Dr. Paris proposes to give the name of *concin*. Dr. Braudes has discovered a particular principle of alkaline nature, which he terms *cicutine*, of a green color, insoluble in water, and in doses of half a grain causing vertigo and headache.

Hemlock is a powerful narcotic, and is used as such both internally and as an external application. It has long been employed as a medicine of great efficacy, and although we are indebted to Baron Stoerck, of Vienna, for bringing it into general notice, yet he rated its powers too high, and the multitude of discordant diseases to which he enumerated it as beneficial, led many sober men to doubt its efficacy altogether. Hemlock is nevertheless a useful narcotic, and is advantageously applied as a palliative in many complaints not curable by any other medicine. It is found serviceable in chronic rheumatism, in scrofulous, syphilitic, and other ill-conditioned ulcers and glandular tumors, in pertussic, and the protracted cough, which is very troublesome, and often remains after pneumonic inflammation.

The leaves of this plant are strongly poisonous; many instances of their fatal effects which have occurred in this and other countries are on record. The root of hemlock, however, does not appear to possess any noxious power. Mr. Curtis, in the *Flora Londinensis*, expressly states that they have been eaten in the recent state, and also boiled in considerable quantities, without occasioning any inconvenience. An overdose of hemlock produces sickness, vertigo, delirium, dilatation of the pupils, great anxiety, stupor, and convulsions. The best antidote is vinegar, after the stomach has been evacuated and the cerebral excitement reduced by bleeding and purging.

The best mode of exhibiting hemlock is the dried leaves in the form of powder; dose three grains, gradually increasing it every day until a slight vertigo forbids its further increase. Its operation usually commences in less than half an hour, and, if moderate, seldom continues longer than twenty-four hours.

N° 72.

Euonymus Atropurpureus.

Spindle-tree, Wa-hoo.

CELASTRACEÆ.

Staff-trees.

No. 72.

EUONYMUS ATROPURPUREUS.

SPINDLE-TREE. *Burning-Bush, Wa-hoo.*

Geog. Position. United States.
Quality. Bitter.
Power. Tonic, laxative.
Use. Ague, dyspepsia, fever, debility.

BOTANICAL ANALYSIS.

Natural Classification.

ORDER CELASTRACEÆ.

Linnæan Classification.

CLASS V. *Pentandria.* ORDER *Monogynia.*

AUTHORITIES. — Willd. Sp. Pl. 1132. Pursh. Flor. N. A. 168. Raf. Med. Flor. II. 220. U. S. Disp. 1326. Ec. Disp. U. S. 168. Loud. Encyc. Pl. 178. Griff. Med. Bot. 220. Gray, Bot. Text-Book, 762. Howard, Bot. Med. II. 246. Kost, Mat. Med. 434. Wood, Class-Book, 215.

GENUS EUONYMUS.

From the Greek εὖ, *well*, and ὄνομα, *a name*, — *well-named*. The application of the name is, however, obscure. Euonymus was also a heathen divinity.

SYNONYMES. — Fusain, or Bennet de Pretre (Fr.), Spindelbaum (Ger.), Fusaggine (It.).

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* four – five, united at base, imbricated.
COROLLA. *Petals* as many as sepals, inserted by a broad base under the margin of the flat, expanded disc which surrounds the ovary.
STAMENS. As many as the petals, and alternate with them, inserted on the margin of the disc.

OVARY. Superior, immersed in and adhering to the disc.
FRUIT. A capsule or berry.
SEEDS. Either with or without an arillus.

THE SECONDARY CHARACTERS.

EUONYMUS. *Calyx* flat, of five (sometimes four or six) united sepals. *Corolla* flat, inserted on the outer margin of a glandular disc. *Stamens* five, with short filaments. *Capsule* colored, five-angled, five-celled, five-valved. *Seeds* arilled.

Calyx five-parted or five-cleft, flat. *Corolla* flat, inserted on the outer margin of a glandular disc. *Capsule* five-angled, five-celled, five-valved, colored. *Cells* two-lobed. *Seeds* calyptred or arilled.

THE SPECIFIC CHARACTERS.

EUONYMUS ATROPURPUREUS. *Branches* smooth. *Leaves* elliptic-lanceolate, acuminate, finely serrate, puberulent beneath. *Peduncles* compressed, many-flowered. *Flowers* usually pentamerous.

Leaves petioled, lance-oblong, acuminate, serrate. *Peduncles* divaricate, many-flowered. *Flowers* four-cleft. *Fruit* smooth, red.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Polypetalous. *Flowers* inferior, regular. *Stamens* alternate with the petals. *Shrubs.*

NATURAL HISTORY.

The Spindle-tree is a smooth shrub or large bush, growing from four to ten feet high in shady woods and thickets in river bottoms in the Western States. It flowers in June, and its seeds ripen late in the fall. The Indians generally called it *Wa-hoo*, among whom it is said to have been a popular remedy, as well as among the whites of certain early settlements in the Mississippi valley. The same name has also been applied to the *Ulmus alata* of the Southern States, and has thus led to mistakes.

The bark is smooth, dark gray, interspersed with large white, irregular-shaped spots, which disappear towards the termination of the branches. The shrub is considerably branched, the branches shooting up at very acute angles, sometimes three together; the extreme portions of the

branches, constituting the growth of the preceding year, are of a dark green color, with many dark spots, whilst those portions which appear to have been produced two years preceding are less green, with stripes or lines of white. Leaves petiolate, opposite on the young branches, alternate on the old, oblong, ovate, acuminate, serrate, deep green on the upper and light on the under side. Flowers, a kind of cyme, or a cluster often axillary to the leaves, very small, dark reddish-brown inside, inclining to green outside, producing an angular-shaped, rough involucre or husk, which opens in the fall, exhibiting the beautifully bright fiery red fruit or berries in strong contrast with decaying nature, and which has procured for it the name of Burning-bush, which it sometimes bears.

The common name, *Spindle-tree*, is derived from the uses to which another species of EUONYMUS is applied. This species has a wood which, without being hard, is very tough, and this was formerly much employed in making spindles for the spinning-wheel. Now that the jenny has superseded the distaff, this is little used, except for making toothpicks and skewers; and also by watch-makers for cleaning delicate machinery, for which it is very well adapted on account of the fine point with which it may be worked without breaking. Another of its common names, *Prick-wood*, seems to render it not improbable that it was formerly used in the manufacture of those skewer-like pins, which were employed to hold the dress together as late as the reign of Henry the Eighth, when the manufacture of metal pins became more general.

The EUONYMUS ATROPURPUREUS, Spindle-tree, is of easy culture in common soil, and propagated by layers, ripened cuttings planted in autumn, or seeds. It grows throughout the United States.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The bark of the root of EUONYMUS ATROPURPUREUS is the part employed as medicine, and should be gathered at the time that it will peal off readily, when it should be beaten with a hammer or mallet, carefully dried and preserved for use. The bark, when dry, is of a light brown color outside, white within, rough and much wrinkled, resembling in its appearance the dried root of *spignet*. It possesses a pe-

culiar bitterness that is very permanently tonic, and somewhat anti-periodic. It exhibits also a laxative power, on account of which it is esteemed very valuable in the treatment of dyspeptic complaints, for the stomach will bear this substance with advantage while many other tonics produce disagreeable symptoms. Some physicians and practitioners regard it as one of the most valuable articles in dyspepsia.

This medicine is also particularly useful in all cases of debility, and valuable as a tonic after intermittent fever or fever and ague. When depended on for the cure of ague, it should be preceded by an emetic or cathartic, as the circumstances may require, and then, if freely and perseveringly applied, it will generally be successful. It may be used alone, or combined with balmony or any other tonic. The dose is from half to a whole teaspoonful three or four times a day.

The seeds of the *Spindle-tree*, as well as those of the other species, are all nauseous, purgative, and emetic, and are used in some places to destroy vermin on the hair. The leaves are poisonous to sheep and other animals feeding on them.

Mr. C. A. Santos, of Norfolk, Va., in a dissertation upon the subject published in the *American Journal of Pharmacy* (XX. 80), speaks of the bark as tonic, hydragogue, cathartic, diuretic, and antiperiodic. Dr. Twyman, of Westport, Mass., found it, as a cathartic, rather to resemble rhubarb than to possess hydragogue properties, and thought he had obtained useful effects from it as an alterative to the hepatic function. On the whole, the character of its action may be considered as somewhat uncertain, and it might, therefore, well form an object of further examination.

The following are the principal preparations of this medicine: —

Tinctura Euonymus. Take of the bark in coarse powder four ounces, alcohol two pints. Digest seven days and filter.

Tincture of Euonymus. Tonic and antiperiodic, useful in intermittent and remittent fever, and in general debility. The dose is from two to four fluid ounces.

Extractum Euonymus. Take Euonymus bark four pounds, alcohol two and a half gallons, water three gallons. Digest in the alcohol at a temperature a little below the boiling point for four hours, or keep in a warm place for a week, strain through calico, and distil to one pint. Boil the bark in the water for four hours over a slow fire, strain and evaporate to one pint. Mix the liquors and evaporate by means of a water-bath to the proper consistence.

Extract of Euonymus. This article is an excellent laxative bitter, and is very highly esteemed in convalescence from fever, especially when of an intermittent or remittent type, and is decidedly the best article used. The dose is five grains.

N° 73.

HYDSCYAMUS NIGER.

Henbane. Poison tobacco &c.

SOLANACEÆ.

Nightshades.

N°. 73.

HYOSCYAMUS NIGER.

HENBANE, *Poison-tobacco, &c.*

Place—Europe.
Quality—Insipid.
Power—Narcotic, sedative.
Use—Paralysis, convulsions, mania, epilepsy. The *smoke* to relieve tooth-ache

BOTANICAL ANALYSIS.

Natural Order. Luridæ—L. J. Solanaceæ.

CLASS V. *Pentandria*. ORDER *Monogynia*.

Willd. *Sp. Pl.* i. 1010. Woodv. 204. Smith *Flor. Brit.* 598. Eng. Bot. 591 Loudon. *Ency. Pl.* 136. Bigelow *Med. Bot.* i. 161. Linn. *Sp. Pl.* 257. Stephenson and Churchill, i. 9. Raf. *Med. Flor.* i 255. Lind. *Med. Flor.* 508. Per. *El. Med. Bot.* ii. 307. Griff. *Med. Bot.* 484. Wood *Class Book*, 446.

GENUS. HYOCYAMUS.

From *υς*, a pig, and *κυαμος*, a bean, the fruit has been thought to resemble a bean, and is said to be not poisonous to swine.

SYNONYMES.—La jusquiame (*Fr.*), Das Bilsenkraut (*Ger.*), Bilsenkruid. (*Dutch*), Bulme (*Dan.*), Giusquiamo (*I.*) Beleno (*S.*), Meimendro (*Port*) Belmort (*Swed.*). Bielum (*Pol.*), Khorassanie Ajooan (*H.*) Nickran (*Arab.*), Khorassanie onsum (Tam.), Buzirulbury (*Pers*), Adas-pedas (Malay), Adas (*Jav.*)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* four—five, more or less united mostly persistent.
COROLLA. Regular, *Limb* four—five cleft, plaited in æstivation, deciduous.
STAMENS. Four—five (sometimes one abortive), inserted on the corolla, alternate with its segments. *Anthers* bursting longitudinally, rarely by terminal pores.

OVARY. Free (superior), two-celled, (*four-celled in Datura*), with the placenta in the axis. *Styles* and *Stigmas* united into one.

FRUIT. A capsule or berry.

SEEDS. Numerous. *Embryo* curved, lying in fleshy albumen.

THE SECONDARY CHARACTERS.

HYOSCYAMUS. *Calyx* tubular, five cleft. *Corolla* infundibuliform, irregular; one of the five, obtuse lobes larger. *Stamens* five, declinate. *Stigma* capitate. *Capsule* ovoid, two-celled opening with a lid near the summit.

Calyx tubular, five cleft. *Corol* funnel-form, five-lobed, obtuse, irregular. *Stamens* inclined. *Capsule* two-celled, covered with a lid.

THE SPECIFIC CHARACTERS.

HYOSCYAMUS NIGER. *Stem* branching, erect, very leafy, *Leaves* sinuate, clasping. *Flowers* sessile.

Leaves clasping, sinuate. *Flowers* veiny sessile.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER, MONOGYNIA, Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* (rarely shrubby). *Stamens* alternate with petals. *Fruit* capsule or berry. *Cells* two with many seeds. *Æstivation* plicate.

NATURAL HISTORY.

COMMON HENBANE is a native of Europe, and is naturalized in the northern parts of the United States. It grows spontaneously at Detroit and Upper Canada, on waste grounds, and at the sides of roads, particularly on a calcareous soil, flowering in July and August. The root is long, tapering, compact, and fibrous. The stem erect, woody, round, and branched, rising about two feet in height. The leaves are alternate, sessile, and embracing the stem, large, the lower ones being about a foot in length, deeply sinuated, undulated, woolly, and of a sea-green color. The flowers are in terminal, recurved, leafy, simple spikes, and each is simple and erect. The calyx is permanent, pitcher-shaped, with a regular five-cleft border, reticulated with veins. The corolla straw-colored, and beautifully pencilled with

a net-work of purple veins. The filaments are inserted into the tube of the corolla tapering, downy at the base, and supporting purple anthers. The style is purplish, with a blunt, round, stigma. The capsule is globular, invested with the body of the calyx, bilocular, and closed with a convex smooth lid.

The whole plant is covered with soft, white hairs, feels clammy and slightly adhesive. It emits a fœtid odor; is of a sea-green hue, and poisonous when eaten.

A species of bug (*Cimex*) and of beetle (*Chrysomela*) take their specific names from feeding on this plant; but no quadruped is known to eat it, unless the goat and sheep, and that very rarely and sparingly.

The Henbane is a hardy plant, of common culture; it grows in loam and peat, and cuttings root without being covered by a glass.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The virtues of HYOCYAMUS NIGER are completely extracted by diluted alcohol. The watery infusion is of a very pale yellow color and insipid, and has the narcotic odor of the plant. It is not altered by the acids. The alkalies change the color to a deep greenish yellow, which, on the addition of an acid, disappears, and a brownish flocculent precipitate is produced. It is copiously precipitated by solutions of acetate of lead, white; by nitrate of silver, black; sulphate of iron strikes with it a pale olive color, and a dark precipitate is slowly formed. Thence Henbane appears to contain resin, mucus, extractive, a peculiar alkaline salt, and gallic acid. M. M. MEISSNER and BRANDES have examined the nature of this alkaline salt, which they have named *Hyociama*, and have ascertained that on it depends the peculiar virtues and the poisonous properties of this plant. The seeds contain a larger proportion of this alkaloid than either the leaves or the roots; it is in the form of a malate. It crystallizes in long prisms, and forms neutral salts with the acids.

HENBANE is narcotic. Its operation is very similar to that of opium; increasing at first the strength of the pulse, and producing some sense of heat, effects which are followed by proportional diminution of excitement and sleep. In some habits it occasions diaphoresis or diuresis, and sometimes a pustular irruption; at other times it purges; and in over doses, produces sickness, stupor, dimness of sight, hard pulse, delirium, and coma, with

dilation of the pupils; until the pulse gradually becoming weak and tremulous, petechiæ make their appearance, and death ensues. Dissections show the effects of inflammation in the stomach, bowels, and the membranes of the brain. After an emetic is given, and the stomach fully cleared, vinegar is the best antidote.

The effects of Henbane as an anodyne were known to the ancients. But as those were ill understood, its use was almost completely relinquished till the time of Baron Stoerk, who may be regarded as having introduced it. It may be employed in all the cases in which the use of opium is indicated, where the latter disagrees with the habit, or where its constipating effect is wished to be avoided. In painful and spasmodic affections, hysteria, rheumatism, and gout, much benefit has resulted from its use, and it is particularly serviceable when it is united with colocynth or other powerful cathartics, in colica pictonum. It is used externally to lessen and allay the irritation of very sensible parts, thence fomentations of the leaves have been found beneficial in scrofulous and cancerous ulcers, hæmorrhoids and other painful swellings. The leaves and marshmallow flowers boiled in milk, with the addition of a few grains of acetate of lead, are recommended as a topical application in scrofulous ophthalmia. Smoking the leaves, like tobacco, is said to allay the pain of toothache. Its effects in dilating the pupil, when an infusion of it is dropped into the eye, are similar to those of belladonna, and thence it is also employed as a preparative to the operation for cataract. It is used by practitioners very generally, and particularly recommended in the forms of extract and tincture only, and on no occasion should it ever be prescribed in combinations with alkalies, as these destroy its narcotic powers in twenty-four hours.

The leaves are active only in the second year of the plant; if scattered about buildings they are said to drive away mice and rats. If more than a small portion of the leaves should have been accidentally swallowed, brisk emetics ought instantly to be taken, and after discharging the contents of the stomach, it will be necessary to administer some mild drinks, such as large portions of vinegar or lemon juice diluted with water, as the stomach is able to support them. The whole plant is fatal to poultry, whence its common name; it intoxicates swine, but cows, horses, dogs, and goats are able to bear a tolerable proportion before they are affected.

No 74.

HEDEOMA PULEGIOIDES.

Pennyroyal. Sick-weed. Squaw-mint &c

LABIATÆ.

Labiate Plants.

N°. 74.

HEDEOMA PULEGIOIDES.

PENNYROYAL, *Tick-weed, Squaw-mint, &c.*

Place—North America.
Quality—Aromatic.
Power—Stomachic, stimulating, emmanagogue.
Use—Nausea, flatulence, obstructed menstruation.

BOTANICAL ANALYSIS.

Natural Order. Labiatæ—L. J.

CLASS XIV. *Didynamia.* ORDER *Gymnospermia.*

Persoon *Synop.* ii. 131. Beach *Fam Ph.* 677. Loudon *Ency. Pl.* 500. Barton *Veg. Mat. Med.* ii. 165. Raf. *Med. Flor.* i. 231. Lind *Med. Flor.* 491. Griff. *Med. Bot.* 508. Kost. *Mat. Med.* 328. Wood. *Class Book*, 422.

GENUS. HEDEOMA.

From the Greek ἡδεια, sweet, or agreeable, οσμη, smell, on account of the fragrance of the plant.

SYNONYMES.—Menthe peuliot(*F.*), Polei (*Ger. Dutch, Dan.*), Pulija (*Swedish*), Poley (*Pol.*), Puleggio (*J.*), Paleo (*S.*), Poejo (*Port.*)

THE ESSENTIAL CHARACTERS.

CALYX. Tubular, regularly five-toothed or cleft, or bilabiate, persistent.

COROLLA. Bilabiate, (rarely regular, five-toothed,) the upper lip bifid or entire, overlapping in æstivation the lower three-cleft one.

STAMENS. Four, didynamous, or sometimes only two, the upper pair being abortive or wanting, situated on the corolla tube. *Anthers* mostly two-celled.

OVARY. Free, deeply four-lobed, the single style arising from the base of the lobes.

FRUIT. One—four hard nuts or achenia.
SEEDS. Erect, with little or no albumen. *Embryo* erect. *Cotyledons* flat.

THE SECONDARY CHARACTERS.

HEDEOMA. *Calyx* gibbous beneath at base, thirteen-ribbed, throat hairy, upper lip of *Corolla* erect, flat, lower lip spreading, three-lobed. *Stamens* two, fertile, ascending.

Calyx two-lipped, gibbose at the base, upper lip with three lanceolate teeth; lower lip with two subulate ones. *Coral* ringent. Two short *Stamens* barren.

THE SPECIFIC CHARACTERS.

HEDEOMA PULEGIOIDES. *Leaves* oblong, few-toothed *Flowers* axillary, whorled.

Pubescent, *Leaves* oblong, serrate. *Peduncles* axillary, whorled.

THE ARTIFICIAL CHARACTERS.

CLASS DIDYNAMIA. *Stamens* four, two of them longer than the other two. ORDER GYMNOSPERMIA. *Seeds* naked. *Achenia* four (or fewer), included in the calyx. *Corolla* monopetalous and labiate.

NATURAL HISTORY.

The species comprising this genus HEDEOMA, which are mostly North American plants, were included by Linnæus and other botanists in *Cunila* and *Melissa*, but were distinguished, separated and named by Persoon, and they constitute a small, but well-marked group.

The HEDEOMA PULEGIOIDES notwithstanding, is yet commonly blended, even by some medical writers, with the MENTHA PULEGIUM, which belongs to a different genus, and does not grow in America. The shape, smell, and properties are somewhat similar, whence the same vulgar name; but the American plant appears to be most efficient.

HEDEOMA PULEGIOIDES, the *American Pennyroyal*, is very common and abundant all over the United States and in Canada growing on dry and hilly grounds, on the road sides, in uncultivated fields, and in open woods, and flowers throughout the summer. The plant is a small strong scented herb, held in high

repute in domestic practice, and is of easy culture. The root is annual, small, fibrous, branched, and yellowish. The stem is upright, about a foot high, with slender branches, obscurely angular, terete, and pubescent. The leaves are small, opposite, oblong, lanceolate, or suboval, on short petioles, base attenuated and subacute, margin with small remote serratures, surface rough or pubescent, nerved and pale beneath. Flowers all along the branches in axillary whorls of six, nodding on short pedicles, very small. Calyx pubescent, corolla very small, hardly longer, white, with the lips purple, base slender, then campanulate with two small lips, the upper rounded, seldom notched, the lower with two rounded lateral lobes, and an obcordate middle lobe. Stamina and style filiform, anthers oblong. Stigma lateral acute. Fruit four small oblong seeds in the persistent calyx, mouth closed by the ciliated bristles of the lower lip.

Pennyroyal is cultivated for its use in culinary and pharmaceutical preparations. It grows best on a tenacious soil, even a clay is more suitable than a light, silicious soil. It should be moderately fertile, free of stagnant moisture, and consequently on a dry subsoil, or well-drained. A wet soil makes the plant luxuriant in summer, but insures decay in winter.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The medical properties of HEDEOMA PULEGIOIDES are stimulant, carminative, diaphoretic and emmenagogue. The smell and taste are very warm, pungent, strong, and hardly aromatic, but pleasant or otherwise according to different personal affections. Its active properties reside in a volatile oil, which may be procured by distillation. One cwt. of fresh pennyroyal affords an average produce of one lb. of essential oil. This oil is analogous in properties to that of the European pennyroyal. It has a light yellow color, with the odor and taste of the plant. Its specific gravity is 0.948. It is much used as a rubefacient. It is an ingredient of most of the liniments and other preparations that are designed to act as excitants and counter irritants on the surface. By many it is also used internally as a stimulant, diaphoretic and carminative. It is considered a good remedy in flatulent colic and sick stomach, to correct the operation of nauseating or griping medicines, and to impart flavor to mixtures. It may either be taken alone, dropped on sugar, or it may be

worked into a mass and thus formed into pills. The dose is from two or ten drops.

The infusion commonly called *pennyroyal tea*, is a very popular domestic remedy, and freqnently taken freely without regard to quantity or strength. The most popular method of making this tea is: take of pennyroyal a handful, of boiling water a pint. Steep in it a covered vessel, and sweeten with sugar. This infusion is warming and grateful to the stomach, and is particularly useful in allaying nausea and vomiting. In large draughts it promotes perspiration, and taken freely on going to bed, it is an excellent remedy for a sudden cold, or slight attack of disease. Combined with cayenne, it may be given with great advantage in obstruction of the menses, the feet having been previously bathed in warm water, hence it is much used as an emmenagogue in popular practice, and frequently with considerable success. It affords relief in flatulency and pains of the stomach and bowels, and for this purpose may be given freely to children. Although pennyroyal affords a very popular graveolent tea, and probably more used in domestic practice than any other of the aromatic herbs, yet there are many other labiate plants which are equivalent to it, and possibly more agreeable.

This herb put into water which has become unwholesome during a sea voyage, will give it an agreeable flavor, and render it less injurious to the system.

This plant is also frequently used to kill the Ticks, *Ixodes*, which attach themselves to men, dogs, and cattle in summer. Hence one of its common or vulgar names. These troublesome animals are found wherever the *Hedysarums* and *Lespedezas* or true tickweeds grow, upon which they breed. By rubbing the legs or boots with this plant or its oil, those insects will avoid you, or, if they have taken hold, the oil kills them. A strong decoction of the plant is equally convenient, and a strong decoction of tobacco is as good.

The whole plant gives out, when pressed between the fingers, a strong, pungent, and grateful scent, which is extremely reviving and pleasant. The expressed juice mixed with a little sugar-candy has been frequently prescribed for the hooping cough, and with remarkable success. A table-spoonful is a dose.

A conserve of the young tops acts as a diuretic and has proved serviceable in the gravel. It is likewise good for the jaundice and all other complaints arising from obstruction of the viscera.

№ 75.

ACONITUM NAPELLUS.

Wolfsbane Monkshood &c

RANUNCULACEÆ.

Crowfoots.

N°. 75.

ACONITUM NAPELLUS.

MONK'S-HOOD, *Wolf's-bane.*

Place—Europe.
Quality—Acrid, somewhat poisonous.
Power—Narcotic, diaphoretic, diuretic.
Use—Rheumatism, gout, paralysis, &c.

BOTANICAL ANALYSIS.

Natural Order. Multisiliquæ—L. Ranunculaceæ—J.

CLASS XIII. *Polyandria.* ORDER *Monogynia.*

Willd. *Sp. Pl.* ii. 1235. Woodv. *Med. Bot.* 2d Ed. 165. Linn. *Sp. Pl.* 751. U. S. *Dis.* 52 Raff. *Med. Flor.* ii. 186. Lindley, *Med. Flor.* Per. *El. Mat. Med.* ii. 749. Griff. *Med. Bot.* 91. Stephenson and Churchil, i. 28. Wood, *Class Book*, 146.

GENUS. ACONITUM.

The derivation is not clear. Some writers derive it from *Arone*, a town of Bithynia, others deduce it from the Freek ακονιτος, without dust; because the plant grows in dry places; but after all, it most probably comes from ακονη, a rock, for the plant grows also in rocky places.

SYNONYMES.—*Aconit*, chaperon de Moine (*Fr.*) Blanerstrumhut (*Ger.*) Monnikskappen (*Belg.*) Stermhut (*Dan.*) Stermhatt (*Swed.*) Napello (*I.*) Aconito (*S.*)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* mostly five, sometimes three, four, or six, mostly deciduous, and imbricated in æstivation.

COROLLA. *Petals* three—fifteen, hypogynous. Sometimes irregular or wanting.

STAMENS. Indefinite or numerous, distinct, hypogyncus. *Anthers* adnate or innate.

OVARY. Indefinite or numerous, rarely solitary or few, distinct, seated on the torus.

FRUIT. Either dry achenia, or baccate, or follicular. *Embryo* Minute, at the base of horny or fleshy albumen.

SEEDS. Numerous.

THE SECONDARY CHARACTERS.

ACONITUM. *Sepals* five, irregular, colored, upper one vaulted. *Petals* five, the three lower minute, the two upper on long claws, concealed beneath the upper sepal, recurved and nectariferous at the apex. *Styles* three—five. *Follicles* three—five.

Calyx wanting. *Petals* five, upper one vaulted. *Nectaries* two, hooded, peduncled, recurved. *Carpels* three or five, pod-like. By some, the corol is considered as a colored calyx.

THE SPECIFIC CHARACTERS.

ACONITUM NAPELLUS. *Stem* straight, erect. *Leaves* deeply five-cleft, cut into linear segments, furrowed above. *Upper Sepals* arched at the back. *Lateral ones* hairy on the inside. *Ovary* smooth.

Leaves shining, five-parted, the divisions three-parted by gashed incisions, sub-divisions linear. Upper lip of the *corol* lanceolate, ascending, two-cleft. *Spur* straight, obtuse.

THE ARTIFICIAL CHARACTERS.

CLASS X. POLYANDRIA. *Stamens* twenty or more, arising from the receptacle, (hypogynous.) ORDER MONOGYNIA. *Ovary* simple. *Calyx* four-five sepaled. *Leaves* ternately divided. *Flowers* racemose.

NATURAL HISTORY.

The ancient history of ACONITUM is involved in great obscurity. The Greeks make frequent reference to a most virulent poison, which they term *ακονιτον*. Theophrastus is the earliest writer who speaks of it. As *Aconitum Napellus* is a virulent poison, and is a native of Greece, where it is known at the present day, by the above appellation, it would appear probable that our common aconite was the plant referred to by the ancients. But the characters of it as given by Theophrastus quite preclude

this supposition, and the plant described by this ancient naturalist has never been satisfactorily identified.

This species, *Aconitum Napellus*, varies much in the color and size of its flowers, especially in a cultivated state, and is much prized as an ornament in the garden. It is a native of most parts of Europe, in mountain forests and plains, flowering in May and June. The roots are napiform and fibrous. The stem is firm, elongated, erect, smooth, rising to the height of five or six feet, leafy and terminating in a long sparse spike of flowers, racemose, and the peduncles branched below. The lower leaves are few, alternate on long channelled petioles, palmated, or rather pedate, being divided to the base into three or five broad cuneiform divisions, deeply cleft and toothed. The petioles are shorter and the leaves less divided the nearer they are to the summit of the stem. The color of the whole is a deep green on the upper disk, and a pale green on the under; both sides are naked, smooth, and shining. The flowers are of a cerulean blue, on unifloral, erect, axillary, pubescent pedicels. They have no calyx; but two small, erect, calycinal stipules, or rather subulate bracteolæ, are placed one on each side of the pedicle within a few lines of the flower. The petals are five; the uppermost helmet-shaped and more accuminate than in some others, covering two singular, peduncled nectaries; the lateral ones broad and roundish, the lower oblong, elliptical, and divaricating. These four are slightly pubescent. The nectaries are cuculated, the spur of each being hooked and blunt. The lip lanceolate, revolute and bifid. The filaments are spread, and white at the base, where they closely cover the germens, but the upper part is filiform, purple, spreading, and bearing whitish anthers. The germens are three, four, or five, with simple, reflected stigmas, and become capsules with many regular seeds.

The plant is of easy culture; and for medical purposes, the leaves should be gathered when the flowers appear.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The whole of the plant is poisonous; but the deleterious qualities are lost in a considerable degree when it is dried, or long kept, and much of its acrimony is dissipated. The leaves when fresh have a faint narcotic odor, and a moderately bitter, acrid taste, leaving a painful sensation of heat in the mouth when they are much chewed. The activity of the plant is

very uncertain, and depends on soil and the nature of the seasons. The tuber is most active immediately after the period of flowering, next the seed, and successively the leaves, stalk and fruit. Its narcotic principle is an alkaloid, which has been named *Aconita*. This principle is soluble in cold water, scarcely so in cold alcohol, but freely if heat be applied.

Aconite is narcotic, diaphoretic, and in some cases, diuretic. In over doses it occasions violent nausea, vomiting, hypercatharsis, vertigo, cold sweats, mania and convulsions, which terminate in death; and these effects appear to depend on its action on the nervous system, as dissections of fatal cases have not displayed any particular marks of organic disease.

Although, as already mentioned, this plant was known to the ancients, it was introduced into regular medical practice by Baron Stoerk of Vienna, who administered it internally in chronic rheumatism, gout, exostosis, paralysis, and scirrhus; and since the publication of his experiments in 1702, it has been advantageously employed in similar cases, and also in amaurosis, scrofula, cancer, itch, venereal nodes and intermittents. It is now universally ranked among the most potent of therapeutic agents. In consequence, however, of its uncertain action, and its occasional production of alarming symptoms, it is not in general use. Much caution is required in the exhibition of it; and it is absolutely necessary to know the length of time it has been gathered, as its activity varies so very considerably as to require this to be ascertained before the dose can be apportioned. It is given in the form of powder, extract and tincture, and may be combined with calomel, antimonials, camphor and guaiacum. The dose of the powder is one or two grains, gradually increasing it to six or eight. The extract varies much in strength; but its use should always be commenced in doses not exceeding half a grain. The tincture may be administered in doses of ten to fifteen drops.

Succus Spissatus Aconita Napelli. *Inspissated Juice of Aconite.* Let the fresh leaves of aconite be bruised, enclose them in a hempen bag, and press them strongly until they yield their juice, which is to be evaporated in flat vessels heated with boiling water saturated with muriate of soda, and immediately reduced to the consistence of thick honey. After the mass is cold, let it be put into glazed earthen vessels and moistened with alcohol. This extract is the form under which Baron Storck introduced wolf'sbane into practice.

Nº 76.

HELONIAS DIOICA.

Unicorn. Blazing-star. Ague-root &c

MELANTHACEÆ.

Melanths.

No. 76.

HELONIAS DIOICA.

UNICORN ROOT.

Place—United States.
Quality—Not unpleasant.
Power—Tonic, anthelmintic.
Use—Colic, rheumatism, jaundice.

BOTANICAL ANALYSIS.

Natural Order. Coronariæ.—Melanthaceæ. J.

CLASS VI. *Hexandria.* ORDER *Trigynia.*

Willd. *Sp. Pl.* ii. 183. Lou. *Ency. Pl.* 268. Linn. *Sp. Pl.* 456. Bigelow, *Med. Bot.* iii. 50. U. S. *Dis.* 64. Raf. *Med. Flor.* i. 37. Per *El. Mat. Med.* ii. 130. Griff. *Med. Bot.* 263. Wood *Class Book*, 559.

GENUS. HELONIAS.

From the Greek, ἕλος, a marsh, where some species grow

THE ESSENTIAL CHARACTERS.

FLORAL ENVELOPE, or *Perianth* regular, in two series, each of three segments which are distinct or united at base, generally involute in æstivation.

STAMENS. Six, with extrorse anthers.

OVARY. Three-celled, nine—many ovuled. *Styles* distinct or wanting. *Stigmas* undivided.

FRUIT. *Capsule* or berry, three-celled, generally with septicidal dehiscence.

SEEDS. With a membranous testa, and dense fleshy albumen.

HELONIAS DIOICA.

THE SECONDARY CHARACTERS.

HELONIAS. *Perianth* six-parted, spreading, petaloid, the segments sessile, and without glands. *Styles* three, distinct. *Capsule* three-celled, three-horned. *Cells* many-seeded.

Calyx wanting. *Corol* six-parted or six-petalled, spreading, glandless. *Styles* distinct. *Capsule* three-celled, three-horned, few-seeded.

SPECIFIC CHARACTERS.

HELONIAS DIOICA. *Stem* leafy. *Leaves* lanceolate, radical ones oblanceolate. *Raceme* spiked, nodding, diœcious. *Pedicels* short, without bracts. *Stamens* exserted. *Segments* linear.

Scape leafy. *Racemes* spiked, nodding. *Pedicels* short, subtracted. *Filaments* longer than the corol. *Petals* linear. *Leaves* lance-oblong. Generally diœcious.

THE ARTIFICIAL CHARACTERS.

CLASS HEXANDRIA. *Stamens* six. ORDER TRIGYNIA. Endogens. *Calyx and Corolla* similarly developed. *Flowers* conspicuous, mostly colored. *Ovary* many seeded.

HÆMODORACEÆ.

Bloodroots.

No. 76.

ALETRIS FARINOSA.

STAR-GRASS, *Colic root.*

BOTANICAL ANALYSIS.

Natural Order. Coronariæ, L. Hæmodoraceæ, J.

CLASS VI. *Hexandria.* ORDER *Monogynia.*

GENUS. ALETRIS.

From the Greek αλέιας, meal. from the dust with which the plant is covered.

GENERAL CHARACTERS.

Perianth semi-inferior, tubular, with a six-cleft spreading

limb, somewhat hexagonal, scabrous and plaited externally *Stamens* inserted on the base of the segments. *Filaments* flat. *Anthers* somewhat sagittate. *Ovary* three-lobed, pyramidal. *Style* formed of three connate bristles. *Stigma* simple. *Capsule* pyramidal, opening in three directions at the apex. *Seeds* very small, striated, numerous.

NATURAL HISTORY.

On account of the great irregularity and confusion with many medical writers on the Unicorn, Unicorn-root, Star-grass, Colic-root, &c., as two American plants of different orders, genera, and species, are simultaneously, commonly, and vulgarly called, it has been determined to designate and describe both under one and the same number (No. 76,) in the Family Flora.

The HELONIAS DIOICA, *Unicorn-root*, is abundant in some of the Western States, and it is found also in Pennsylvania, New-York, and Connecticut. It grows in woodlands and meadows, delighting in a moist situation, and blossoms in midsummer. The root is perennial, rather smaller than the little finger, irregular, from one to two inches long, of a dirty dark color, very hard, full of little pits, rough and wrinkled, having numerous small darkish fibrous roots, which when deprived of their outside bark somewhat resemble hog's bristles. The end of the caudex or main root often dead or rotten; premorse. Leaves radical, pale, smooth, evergreen, lanceolate in a sort of whorl at the base of the scape. Stem or scape from eight to eighteen inches high, upright furrowed, and terminating in a spike or tassel of white diœcious flowers. Flowers small, very numerous. greenish white, in long, terminal, spicate racemes, which are more slender and weak on the barren plants. Ovaries as long as the linear petals, subtriangular. Capsule three-furrowed, oblong, tapering at the base, opening at the top. The fertile plants are taller, more erect, but with fewer flowers.

The ALETRIS FARINOSA, *Star-grass*, is found in almost all parts of the United States, growing in poor, dry soils in open situations on hills, prairies, and borders of woods, and flowers in June and July. The root is perennial, small, branched, crooked, blackish outside, brown within, premorse, intensely bitter. Stem or scape round erect, from one to two feet high, naked, except a few scattered bracts ending in a long spike of white, somewhat

scattered flowers, and at base surrounded with a circle of lanceolate, sessile leaves, which spring immediately from the foot and spread on the ground in the form of a star. Hence have originated the popular names of star-grass, blazing star, and mealy star-wort, by which the plant is known in different parts of the country. The leaves are entire, pointed, very smooth, longitudinally veined, and of unequal size, the largest being about four inches in length.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The root of HELONIAS DIOICIA is the part principally used, and is highly celebrated as a tonic, and general strengthener of the system. Dr. ROGERS says it relieves colic, stranguary, rheumatism, and jaundice. It affords an excellent female medicine, and has a powerful tendency to prevent abortion, and they who are liable to accidents of this nature, ought to make frequent use of it. Half a tea-spoonful of the powdered root may be taken three times a day, in a gill of warm water, or for ordinary use, a portion of it may be added to the bitter tonic. It is also highly valued in suppressed menstruation.

The Unicorn-root is also an excellent remedy for coughs, consumptions, and all complaints of the lungs, promoting expectoration and insensible perspiration. The constant use of it, however, sometimes makes the mouth sore, when it must be laid aside, and some other expectorant used till the mouth gets well, and then it may be again resumed.

The root of the ALETRIS FARINOSA, is the official portion employed as medicine. It is a very bitter and valuable tonic and stomachic, promoting in small doses the appetite and digestion; but in large doses is apt to produce nausea and vomiting. Twelve grains of the powdered root is the largest dose.

The bitterness appears to reside in a resinous matter, which is fully imparted in the tincture, to alcohol, which it renders extremely bitter, whilst water is rendered much less so. The tincture becomes turbid by the addition of water.

The *star-grass* may be given in tincture, decoction or substance, though the first and last forms are undoubtedly the best; or it may be incorporated into cordials or syrups. It is useful in all cases of debility and loss of appetite, fevers, colic, and rheumatism.

Nº 77.

CASSIA-FISTULA.

Cassia, Purging Cassia Pudding-pipe tree &c.

LEGUMINOSÆ.

Leguminous Plants.

No. 77.

CASSIA FISTULA.

Cassia, *Purging cassia, Pudding pipe tree, &c., &c.*

Place—East Indies, Egypt, Arabia.
Quality—Sweet, somewhat nauseous.
Power—Demulcent.
Use—Obstipations of the bowels, nephritic calculi.

BOTANICAL ANALYSIS.

Natural Order. Lomentaceæ—L. Leguminosæ—J.

Class X. *Decandria.* Order *Monogynia.*

Willd. *Sp. Pl.* ii. 513. Woodv. *Med. Bot.* 2d Ed. iii. 60. Loudon *Ency. Pl.* 348. Linn. *Sp. Pl.* 540. U. S. *Dis.* 186 Stephenson and Churchill. Lindley, *Flor. Med.* 262. Per. *El. Mat. Med.* ii. 601. Griff. *Med. Bot.* 558. Wood, *C. B.* 236.

Genus. CASSIA.

From the Hebrew *Ketzioth*, rendered by κασιαη in the Septuagint, and latinized *Cassia.*

Synonymes.—Casse (*Fr.*) Rohnkassie (*Ger.*) Pypkassie (*Dutch.*) Cassievar (*Dan. Swed.*) Polpa di Cassia (*I.*) Fistularis (*Sp.*) Ameltas (*H.*) Suvernaca (*San.*) Konnekai (*Tam.*) Khyar Sneber (*Arab.*) Khyar Chirber (*Pers.*) Drangu (*Jav.*) Mentus (*Malay.*) Sonali (*Beng.*)

THE ESSENTIAL CHARACTERS.

Calyx. *Sepals* generally five, more or less united, often unequal.
Corolla. *Petals* five, either papilionaceous or regular, perigynous.
Stamens. Diadelphous, monadelphous or distinct. *Anthers* versatile.
Ovary. Superior, single and simple. *Style* and *Stigma* simple.

CASSIA FISTULA.

FRUIT. A *legume*, either continuous (one-celled) or (a *lomen*t) jointed into one-seeded cells.

SEEDS. Solitary or several, destitute of albumen.

THE SECONDARY CHARACTERS.

CASSIA. *Sepals* five, scarcely united at base, nearly equal. *Petals* five, unequal, but not papilionaceous. *Stamens* ten, distinct. Three upper *anthers* often sterile; three lower ones beaked. *Legume* many seeded.

Calyx five-sepalled. *Corol* five-petalled. *Anthers* three, lower ones beaked, and on longer incurved filaments. *Legume* membranaceous

THE SPECIFIC CHARACTERS.

CASSIA FISTULA. *Trunk* from forty to fifty feet high, about the size of a walnut tree. *Leaves* large, composed of from five to six pairs of oval and acute folicles, from three to five inches long. *Flowers* large, yellow, in clusters, hanging from the axilla of the leaves.

Leaves in six pairs. *Petioles* glandless. *Legume* reniform.

THE ARTIFICIAL CHARACTERS.

CLASS DECANDRIA. *Stamens* ten. ORDER MONOGYNIA *Fruit*, a legume, *Ovary* single and simple.

NATURAL HISTORY.

CASSIA FISTULA is a native of Egypt and the East Indies, but is now naturalized in the West Indies and South America. It was known to the Arab and Greek physicians of the middle ages, and is supposed to have received its name from its agreeable odor, somewhat resembling that of the celebrated spice.

The tree rises to the height or forty or fifty feet, with a large trunk, covered with a soft, cineritious bark, and is much branched at the top. The leaves are composed of six pairs of ovate, pointed, undulated pinnæ, of a pale green color, with many transverse nerves, and peduncled. The stipules are scarcely apparent. The flowers which appear in June are of a golden color, placed upon long pendent terminal spikes. The leaves of the calyx are crenated, blunt and greenish. The petals unequal, spreading and waved. The three undermost

filaments are long and incurved. The others exhibit large anthers, three of which are rostrated, or like the open beak of a bird, at the extremity. The fruit is a long woody, dark-brown pod, about the thickness of the human thumb, and nearly two feet in length, cylindrical, with two longitudinal furrows on one side, and one on the other, and divided into numerous transverse cells, each containing one smooth, oval, yellowish, shining seed, with red lines dividing it longitudinally, imbedded in soft black pulp.

The fruit of the CASSIA FISTULA is known in commerce by the name of *Cassia pods*, which are said to undergo a kind of fermentation, to prepare them for keeping. For this purpose they are collected before they are quite ripe, and carried into a close room, in which is prepared a layer of palm leaves and straw six inches thick, on which they are laid, the room closed, and the next day the heap sprinkled with water, and this process repeated. In this way they are treated for forty days till they become black. Those which are brought to this market come principally from the West Indies, packed in casks and cases, but a superior kind is brought from the East Indies, and is easily distinguished by its smaller, smooth pod, and by the greater blackness of its pulp. The heaviest pods, and those in which the seeds do not rattle on being shaken, are the best, and contain the greatest quantity of pulp.

The tree will thrive in loam and peat, and cuttings will root in sand under a hand glass, in moist heat.

CHEMICAL AND MEDICAL PROPERTIES.

The pulp of CASSIA FISTULA is the only part employed in medicine, it is of a very dark-brown color, of a very faint and sick odor, and of a sweet mucilaginous and sub-acid taste. It is apt to become sour if long exposed to the air, or mouldy if kept in a damp place. It is viscid, almost entirely soluble in water, and partially so in alcohol and sulphuric ether. The watery infusion, which shows a tendency to gelatinize, has when filtered the color of the pulp, and yields a precipitate with alcohol and the solution of the superacetate of lead. The alcholic and etherial tinctures are not affected by the addition of water, although when they are evaporated a thin pellicle of resin remains. No alteration is produced on the alcoholic and watery infusions by infusion of galls, nitrate of silver, sulphate of iron, nor the

nitric nor sulphuric acids; but chlorine throws down a yellow-colored precipitate, which is insoluble in ether. Hence there is reason for concluding with VANQUELIN, that this pulp contains sugar, gelatin gluten, mucus, a small portion of resin, etxractive, and some coloring matter.

Cassia pulp is a gentle laxative, and well adapted for children and very delicate females. In small doses it is mild and agreeable, and in larger ones purgative, but from the quantity required to produce this latter effect, it is apt to occasion nausea, flatulence, and griping. To assist its operation and prevent the griping, it is usually conjoined with some neutral salt and an aromatic. It does not appear to possess any advantage over the pulp of prunes, and is not as agreeable. It is, however, seldom used in this country, and as seldom in England.

The root also contains a bitter principle, and has been employed as a substitute for Peruvian bark. It contains a peculiar principle, which has been examined by CAVENTON, who regards it as a powerful diuretic. It forms soluble combinations with the mineral acids. The leaves and the flowers are also purgative. Their employment is indicated when in the course of a phlegmasia it is necessary to keep the bowels open, but their administration is contra-indicated in cases of hypochondria and in atonic affections.

CONFECTIO CASSIÆ FISTULÆ. *Confection of Cassia.* Take of fresh cassia pulp *half a pound*, manna *two ounces*, tamarind pulp *an ounce*, syrup of roses *half a pound.* Bruise the manna, then dissolve it in the syrup by the heat of a water bath, and having mixed in the pulp, evaporate down to a proper consistence.

ELECTUARIUM CASSIÆ FISTULÆ. *Electuary of Cassia.* Take of cassia pulp *four parts*, tamarind pulp, manna, of each *one part*, syrup of damask roses *four parts.* Bruise the manna in a mortar, and dissolve it in the syrup by means of a gentle heat, then add the pulps, and by a continued heat reduce the mixture to a proper consistence.

Or *another.* Take of freshly extracted cassia pulp *half a pound*, manna *two ounces*, tamarind pulp *an ounce*, syrup of orange *half a pound.* Bruise the manna, then dissolve it in the syrup by means of a moderate heat and add the pulp; lastly, evaporate slowly the mixture to a proper consistence.

This electuary is gently purgative, and is used to relieve habitual costiveness, as a purge for children, and as a vehicle for the exhibition of other more powerful medicines.

Nº 78.

PANAX QUINQUEFOLIUM.

Ginseng Red-berry. Five-Fingers &c.

ARALIACEÆ.

Araliads.

N°. 78.

PANAX QUINQUEFOLIUM.

GINSENG, *Red-berry, Five fingers, &c., &c.*

Place—North America.
Quality—Sweetish, aromatic.
Power—Stimulant, antispasmodic.
Use—Nervous affections, debility.

BOTANICAL ANALYSIS.

Natural Order. Hederaceæ—L. Araliaceæ—J.

CLASS V. *Pentandria.* ORDER *Digynia.*

Willd. *Sp. Pl.* iv. 1124. Woodv. *Med. Bot.* 2d Ed. 149 t 58. Loudon *Ency. P.* 872 Bigelow *Med. Bot.* ii. 82. Linn. *Sp. Pl.* 393. U. S. *Dis.* 530. Raff. *Med. Bot* ii. 53. Per. El. *Mat. Med.* ii. 474. Griff. *Med. Bot.* 344. Kost. *Mat. Med.* 518. Tor. and Gray *Fl.* i. 646. Wood. *C. B.* 295

GENUS. PANAX.

From the Greek Παν all, and ακας a remedy supposed to be a panacea or universal remedy.

SYNONYMES.—Ginseng d'Amerique (*Fr.*) Ginsang (*It.*) Kraftwurzel (*Ger.*)

THE ESSENTIAL CHARACTERS.

CALYX. Superior, entire, or toothed.
COROLLA. *Petals* five—ten deciduous, rarely wanting, valvate in æstivation.
STAMENS. Equal in number to the petals, and alternate with them. *Anthers* introrse.
OVARY. Crowned with a disk, two or many celled. *Ovules* solitary *Styles* as many as the cells.
FRUIT. Baccate or drupacious, of several one-seeded cells.

PANAX QUINQUEFOLIUM.

THE SECONDARY CHARACTERS.

Panax. Dicœciously polygamous. *Calyx* adnate to the ovary. *Limb* short, obsoletely five-toothed in the perfect flower. *Calyx* in the staminate flower entire. *Petals* five. *Stamens* five, alternate with the petals. *Styles* two—three. *Fruit* baccate, two—three celled. *Cells* one seeded.

Polygamous, unbelled. *Involucre* many-leaved. *Calyx* five-toothed in the perfect flower, superior. *Berry* heart-form, two or three seeded. *Calyx* in the staminate flower entire.

THE SPECIFIC CHARACTERS.

Panax Quinquefolium. *Root* fusiform. *Leaves* three, verticillate, five foliate. *Leaflets* oval, acuminate, serrate, petiolate. *Pedicles of the umbel* rather shorter than the common petioles.

Root fusiform. *Leaves* ternate, quinate. *Leaflets* oval, acuminate, petioled, serrate.

THE ARTIFICIAL CHARACTERS.

Class Pentandria. *Stamens* five. Order Digynia. *Calyx* superior. *Flowers* umbelled. *Berry* five-seeded.

NATURAL HISTORY.

The Ginseng is a perennial plant indigenous to North America and Chinese Tartary. It occurs in most parts of the temperate portions of the United States, but is most common to the westward, being almost eradicated in the Atlantic States. It is usually found at the roots of trees, in rich soil, especially in hilly situations. It flowers in June and July. The hardy species thrive well in light rich soil, the others grow in loam and peat, and are increased by cuttings in sand under a hand glass, but from some trials that have been made when attempted to be cultivated, they have not always been found to succeed well.

The Panax Quinquefolium is a high-sounding title, meaning little less than that the plant which bears it is the long sought *universal elixir*, a remedy for all things. In Chinese Tartary the plant has been gathered and employed as an invaluable drug from time immemorial. The roots, which are said to bear some resemblance to the human form, are gathered and dried, and universally used by the Tartars and Chinese.

The Asiatic kind is found principally in that country between 39° and 47° north latitude, in the same kind of localities as in this country. The collection of it is a monopoly enjoyed by the Emperor, who guards the districts in which it grows with great vigilance. Each individual who is employed to collect it, delivers two catties of the best roots gratuitously, and is paid its weight in silver for all over this quantity. This insures the Emperor about 20,000 catties at about one-fourth of their market price.

Notwithstanding that large quantities of this root are exported from this country to China, and being there recognized as the true Ginseng, and that most botanists have declared that tho plants are identical, yet it is now admitted, by some of the best authorities, that they are distinct species, though very closely allied. The mistake originally arose from the Jesuits, some of whom becoming acquainted with the plant in Tartary, thought that they recognized it in the American species; and, in consequence, it was sent to China, where, although considered an inferior kind, it met with a ready sale. But the market has fluctuated very much, as from a fancied deterioration in the article, or from some other cause, it sometimes has not paid the charges of exportation.

The following is a description of the American species. Root fusiform, whitish and thick, often branched, fleshy, with transverse wrinkles. Stem erect, one to two feet high, round, smooth, green below, purplish red above, divided at top into three petioles, having a central peduncle at their base bearing a simple umbel. Leaves on round and smooth footstalks. The petioles are long and commonly furnished with five, but sometimes with three or seven obovate leaflets. These are ovate, acuminate, doubly serrate, dark green above, paler beneath, smooth on both sides, supported on partial footstalks, which, like the general ones, are tinged with red at their insertion. The flowers are small, yellowish, on short pedicles. The barren ones borne on separate plants have larger petals and an entire calyx. The fertile ones are succeeded by berries of a bright scarlet color. The fruit is red, baccate reniform, with two semi-globose seeds.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Ginseng has a peculiar and rather pleasant camphorated smell; the taste is sweet and pungent, with a slight degree of aromatic

bitterness. It is a fine, gentle and agreeable stimulant, also restorative and antispasmodic. No analysis has been made of it; but RAFINESQUE states that the root owes its active properties to a peculiar substance very similar to camphor, which he calls *Panacine*. He says that this is white, pungent, soluble in alcohol and water, and more fixed than camphor; it contains also a volatile oil, sugar, mucilage, resin, &c.

According to the Chinese authorities, the use of this plant nourishes and strengthens the body, clears the judgment, removes all nervous affections, gives a vigorous tone to the human frame, and in short is an effectual remedy in all complaints. OSBUK, in his Voyage to China, (8vo. London, 1731,) says that he never looked into the apothecaries' shops but they were always selling Ginseng; that both poor people and those of the highest rank made use of it, and that they boil half an ounce in their tea or soup every morning as a remedy for consumption and other diseases. Father JARTOUX relates that the most eminent physicians of China have written volumes on the medicinal powers of this plant; asserting that it gives immediate relief in extreme fatigue, either of body or mind, that it dissolves pituitous humours and renders respiration easy; strengthens the stomach, promotes appetite, stops vomiting, removes hysterical, hypcondriacal, and all nervous affections; gives a vigorous tone of body even in extreme old age. It is given by them in a variety of forms, and the only ill result that it is capable of producing is a tendency to hæmorrhage when it is used in very large doses. It may be stated, also, that other persons who have used the Chinese root are of opinion that many of the virtues attributed to it are real, and that it is a highly valuable remedy.

On the other hand, the trials made with it, both in this country and in Europe, show that the American species gives no proof of such efficacy. It is merely a gentle stimulant, with some antispasmodic powers, and is of little estimation. No fair and extended trial of it, however, has been made; and as regards the Chinese kind, it is difficult to come to any just conclusion, for it can scarcely be possible that any article so long in use and so highly prized, can be wholly worthless; and yet there is much reason to believe that its beneficial effects are rather to be ascribed to fashion and the effects of imagination, than to any intrinsic virtues in the root.

The French inhabitants of Lower Canada have for many years used this root for curing the asthma, and as a stomachic.

Nº 79.

CIMICIFUGA RACEMOSA.

Black Snake root, Black Cohosh, Squaw root &c.

RANUNCULACEÆ.

Crowfoots.

N°. 79.

CIMICIFUGA RACEMOSA.

BLACK SNAKE ROOT, *Black Cohosh, Squaw Root, &c.*

Place—Europe and America.
Quality—Bitter, nauseous.
Power—Tonic, stimulating.
Use—Rheumatism, affections of the lungs, chorea, &c.

BOTANICAL ANALYSIS.

Natural Order. Multisilique—L. Ranunculaceæ,—J.

CLASS XIII. *Polyandria.* ORDER *Di-Pentagynia.*

Loudon, *Ency. Pl.* 476. Raf. i. 85. Per. *El. Med Mat.* ii. 758. Griff. *Med. Bot.* 92. Kost. *Mat. Med.* 232. T. & G. *Fl.* i. 36. U. S. *Dis.* 211. Wood *C. B.* 147.

GENUS. CIMICIFUGA.

From the Lat. *cimex*, a bug, and *fugo*, to drive away, indicating certain virtues a species is supposed to possess, or alluding to its offensive odor.

SYNONYMES.—Cimicaire (F.) Das wanzenkraut (Ger.) Wantsdryver (D.) Tægeurt (Dan.)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, mostly five, sometimes three, four or six, mostly deciduous, and imbricated in æstivation.

COROLLA. *Petals*, three—fifteen, hypogynous, sometimes irregular or wanting.

STAMENS. Indefinite, or numerous, distinct, hypogynous. *Anthers* adnate or innate.

OVARY. Indefinite or numerous, rarely solitary, or few, distinct seated on the torus

CIMICIFUGA RACEMOSA.

FRUIT. Either dry achenia, or baccate or follicular. *Embryo* minute, at the base of horny or fleshy albumen.
SEEDS. Numerous.

THE SECONDARY CHARACTERS.

CIMICIFUGA. *Sepals*, four—five. *Petals*, three—eight, sometimes wanting. *Stamens*, indefinite or numerous. *Anthers*, introrse. *Follicles*, one—eight, oblong, many seeded.

Sepals, four or five. *Petals*, three to five, concave or unguiculate (sometimes by abortive growth fewer or none if the genus MACROTRYS is included. *Carpels*, one to eight, follicle like, many seeded.

THE SPECIFIC CHARACTERS.

CIMICIFUGA RACEMOSA. *Leaves*, ternately decompound. *Leaflets*, ovate oblong, incisely serrate. *Racemes*, very long. *Petals*, two, forked slender. *Style*, one. *Capsule*, follicular dry, dehiscent, ovate.

Leaves, decompound. *Leaflets*, oblong-ovate, gash-toothed. *Racemes*, in wand-like spikes. *Capsules*, ovate.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens*, twenty or more, arising from the receptacle (hypogynous). ORDER DI-PENTAGYNIA. *Leaves* never peltate. *Herbs*, with acrid, colorless juice.

NATURAL HISTORY.

The Black Snake Root is common all over the United States from Maine to Florida, Louisiana and Missouri, growing in open woods and hill sides. It flowers in June and July, when its long, white racemes are very conspicuous. The plant is of easy culture. It has a heavy, unpleasant smell when handled, and a disagreeable, nauseous taste.

There are several varieties of this genus, but they are not sufficiently distinct to require notice, and they continue to interchange their species according to the different views of botanists. This plant was placed in the genus ACTÆ by Linnæus, and removed by Pursh to CIMICIFUGA, also a Linnæan genus, in this he has been followed by most modern botanists, although it does not agree with the characters of the latter, better than with

those of the former. Rafinesque made it the type of his genus MACROTRYS, and altered the specific name to *Actocoides;* this generic change was approved in part by De Candolle, who recognized it as a sub-genus of ACTÆA. Subsequently, however, Rafinesque bestowed an entire new appellation on it, describing it in his Medical Flora as BOTROPHIS SERPENTARIA. Much difference of opinion after all, exists among botanists with regard to the true limits of this genus, some rejecting from it all the monogynous species, whilst others include them, merely making of them a separate section. The genus BOTROPHIS of Rafinesque, founded on the single pistil, and single dehiscent capsule would now be adopted, were it not that the officinal species is still recognized in the United States Pharmacopœia, as CIMICIFUGA, as well as by many of our best botanical authorities.

Root perennial, blackish, large, with numerous long fibres. Stem simple, straight, from three to six feet high, smooth, angular, furrowed. Leaves few and alternate, one nearly radical, is very large, decomposed, three pinnate, the upper one is bi-pinnate Leaflets sessile opposite, three to seven, dentate or incised. Flowers in a terminal raceme, from one to three feet long. Calyx, four or five leaved, white. Petals, from four to eight, thickish, sometimes wanting. Stamina numerous. Pistils, from one to five. Capsule, oblong, many seeded. Seeds squamous.

The root, as found in the shops is composed of a rough tuberculated head and numerous radicals, seven inches long, of a black color externally, white internally. The radicals are extremely brittle and liable to be separated. The odor is feeble and earthy, the taste bitter and astringent, leaving an impression of acrimony on the palate. The sensible properties depend upon the time when the root is collected, and the mode of drying and preserving it. It should be collected late in the summer or in the autumn.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The CIMICIFUGA RACEMOSA has been frequently analysed by several eminent and respectable physicians and druggists, according to whom the following substances have been detected. Fatty matter, gum, starch, resin, tannin, wax, gallic acid, sugar, oil, black coloring matter, green coloring matter, lignin, and salts of lime, iron, magnesia and potassa. The experiments, however, led to no decided conclusion as to the nature of the active principle.

The first account we have of the exhibition of this root as a remedial substance is given by the late Professor Barton who considered it a valuable astringent.

Dr. Garden, of Virginia, may be said however to have been the first who particularly drew the attention of the profession to its properties in phthisis, pulmonalis, and other affections, and he speaks of the beneficial effects in the highest terms. He has shown that this medicine, like digitalis, affected the brain and operated powerfully upon the secretory organs and absorbent system. When exhibited in large doses it prostrates to a distressing degree, producing nausea, vertigo, anxiety, great restlesness, pains in the extremities, &c. These effects are, however, only temporary.

Dr. N. Chapman states :—"besides the astringent property of this root which I have never been able to discover in any degree, it is expectorant, narcotic, anti-spasmodic, diaphoretic, and in a large dose, emetic. Given so as to effect sensibly the system, we find first some nausea, followed by great freedom of expectoration, and more or less relaxation of the surface, with slight nervous tremors, and vertiginous affections. The pulse during this state is considerably lowered, and is apt to remain so for some time." He moreover adds, "It is alleged in consumption to lessen the frequency of the pulse, to allay the cough, to quiet the mobility of the system, and particularly to subdue hectic fever. How far this is true my own experience does not enable me to say."

Dr. Mears, who tried the medicine upon himself, has published a number of cases, tending to prove its great efficacy and utility in catarrhal affections generally, rheumatism and violent coughs, and that it is also a valuable astringent in bowel complaints of children.

In chorea it is strongly recommended. Dr. Young, several years ago brought Cimicifuga Racemosa before the profession as a good remedy in this disease, and his results have to a considerable extent been verified by other physicians. Professor Wood found that a case under his care yielded to it after the failure of purgatives and metallic tonics. The latter author exhibited it satisfactorily in a case of convulsions occurring periodically, and connected with uterine disorder. In these cases, however, the precise mode of its operation is obscure.

Black Snake Root may be given in powder, in doses of half a drachm two or three times daily.

N° 80.

CHELONE GLABRA.

Balmony. Snake head. Shell Flower &c.

SCHROPULARIACEÆ.

Figworts.

N°. 80.

CHELONE GLABRA.

SNAKE HEAD, *Salt Rheum weed, Balmony, Shell-flower.*

Place—North America.
Quality—Unpleasant, sickening.
Power—Tonic, laxative.
Use—Fever, jaundice, debility.

BOTANICAL ANALYSIS.

CLASS XIV. *Didynamia.* ORDER *Angiospermia.*

Natural Order. Personatæ.—L. Schropulariaceæ,—J.

Loudon. *Ency. Pl.* 516. Linn. *Sp. Pl.* 748. Raf. *Med. Flor.* ii. 117. Per. *Mat. Med.* Griff. *Med. Bot.* 519. Kost. *Mat. Med.* 456. T. *Flor.* 243. Wood *C. B.* 400.

GENUS. CHELONE.

From the Greek χελωνη, a tortoise, to the back of which the helmet of the present genus has been fancifully compared.

SYNONYMES.—Galane or tortue (F.) Die schildblume (Ger.) Schildbloem (D.) Skiolblomster (Dan.) Skoldblomster (Swed.)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, four or five, unequal, more or less united at base, inferior, persistent.

COROLLA. Bilabiate, personate or otherwise irregular, the lobes imbricate in æstivation.

STAMENS. Four—didynamous rarely with the rudiment of the fifth, sometimes two only, the three others either rudimentary, or wholly wanting.

CHELONE GLABRA.

OVARY. Free—two-celled, many-seeded. *Style* simple. *Stigma* two-lobed.
FRUIT. *Capsule* two-celled, two-valved, with central placentæ.
SEEDS. Indefinite, albuminous. *Embryo* straight.

THE SECONDARY CHARACTERS.

CHELONE. *Calyx* deeply five-parted, with three bracts at base. *Corolla* inflated, bilabiate, the fifth filament abortive, smooth above, shorter than the rest. *Anthers* woolly. *Capsule* valves entire. *Seeds* broadly membranacious, winged.

Calyx five-cleft or five-sepalled. three-bracted. *Corol.* Ringent, inflated, the upper lip emarginate-obtuse, under lip slightly three-cleft. The rudiment of a smooth filament, between and shorter than the two tallest stamens. *Anthers* woolly *Capsule* two-celled, two-valved. *Seeds* with membranaceous margins.

THE SPECIFIC CHARACTERS.

CHELONE GLABRA. Smooth. *Leaves* opposite, oblong-lanceolate, acuminate, serrate. *Flowers* densely spiked.

Leaves, opposite, lance-oblong, acuminate, serrate. *Spikes*, terminal, densely-flowered.

THE ARTIFICIAL CHARACTERS.

CLASS DIDYNAMIA. *Stamens* four, two of them longer than the other two. ORDER ANGIOSPERMIA. *Seeds* in a pericarp. *Calyx* inferior, *Herbs*. *Herbage* green. Seeds many. *Calyx* imbricate in æstivation.

NATURAL HISTORY.

CHELONE is a North American genus, consisting of but few species, all herbaceous plants with opposite leaves, and subimbricately spiked, terminal flowers having the lower lip of the corolla bearded internally. They differ in the form and insertion of the leaves and in the color of the flowers, which vary from pure white to purplish. They are all handsome plants, with singular ornamental and large blossoms, but inodorous, and shaped much like the head of a snake, the mouth open and tongue extended. They abound in most parts of the United States in wet situations, near brooks and waters, and blossom from July until late in the Autumn. They are of easy culture in loamy soil, or loam and a little peat, and propagated by cuttings or by dividing the root.

The root of the CHELONE GLABRA is perennial. Stem erect from two to four feet high, somewhat quadrangular. Leaves

opposite, of a dark and shining green above, with irregular serratures and sessible or nearly so. *Flowers* terminal in a dense short spike. Each flower sessile, and furnished with three bracts, which are ovate, acute, and entire. Calyx with five unequal imbricated segments, oblong and obtuse. Corolla white, often tinged with red, inflated, contracted at the mouth, with short gaping lips. Filaments hairy. Style long, exsert, bending downwards.

For medical purposes, the plant should be collected in clear, dry weather, and as soon as it is in bloom, as the leaves frequently become mildewed after that time. It should be dried in the sun, or in a warm chamber, or loft, and carefully guarded from a moist, or damp atmosphere, or it will acquire a dark or black color.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The best detailed account of the properties of CHILONE GLABAR is given by Rafinesque, who appears to have been the first also who introduced this plant into notice. He was indebted to Dr. Lawrence of New Lebanon, and the Doctor to the Indians and Shakers.

The whole plant may be used, but the leaves only are preferred; these are extensively bitter, and furnish one of the most important and strongest ingredients to the best bitters, without any aromatic smell, and very little astringency. They are said to be tonic, cathartic, and hepatic, but no certain information has been afforded on the subject. No analysis has been made of them, but they appear to contain gallic acid, a peculiar resinous substance, similar to pierine and aloes, of a black color, and very bitter taste, lignine, &c. They communicate their properties to both water and alcohol. Wine is the best menstrum, but it becomes intolerably bitter.

Snakehead is useful in many diseases, fevers, jaundice, hepatitis, eruptions of the skin, &c. In small doses it is laxative, but in full doses, it purges actively, acting powerfully on the liver, and removing the yellowness of the skin in jaundice and liver diseases. The dose is a drachm of the powdered leaves three times a day. The wine of it in small repeated doses has nearly the same effect, although neither so speedily or violently. The Indians use a strong decoction of the whole plant in a variety of complaints, and it is held in much esteem by them.

The leaves make a vermifuge, which is safe in common cases. It should be administered in infusion, continued for a time, and followed by a suitable purge. An ounce of the dried leaves is sufficient in most cases for children.

"As I have discovered," says Dr. Curtis of Ohio, "in the snakehead no tendency either to open or constipate the bowels, I call it a pure, neutral bitter. As bitterness is in its nature stimulant, it is of course deobstruent, and finally restorative. It should therefore be used freely as a general equalizer of the circulation and purifier of the blood."

The following formula is highly recommended :—

Take of pulverized poplar-bark six pounds, golden seal, cloves, ginger, and prickly-ash bark, each a pound and a half, *snake-head* a pound, cayenne three quarters of a pound, and sugar seven pounds. Mix *thoroughly* and sift. If the prickly-ash is omitted, the quantity of cayenne may be somewhat increased. It is usual to add about one-twentieth part of cayenne to the tonic or restorative preparation.

The above preparation is found to be one of the best medicines in use for restoring the tone of the digestive organs. It is an excellent remedy in jaundice, dyspepsia, worms, flatulency, piles, headache, giddiness, pains in the stomach and bowels, diarrhea, gravelly complaints, strangury, gonorrhæa, fluor albus, heart-burn, rickets, mercurial salivation, consumption, and the whole train of chronic diseases. It is a laxative, and keeps the bowels open, unless they are obstinately costive. Its use would be improper during the continuance of a violent febrile or inflammatory affection, but as soon as the disease is subdued it may be freely and beneficially employed. In the form of a weak tea well sweetened, it is a refreshing drink for weak patients, and is grateful also to those in health during the hot weather of summer. If food occasions distress, a dose of it will generally afford relief.

The proper time to take these bitters is about a quarter of an hour before each meal. Take a moderately heaped tea-spoonful of the powder, and double the quantity of sugar, stir them together, add a tea-cupful of boiling water, and drink the tea when sufficiently cool. If the patient is obliged to be in the open air, a tea-spoonful of the powder, with sugar to suit the taste, should be mixed in half a wine-glass of cold, or milk-warm water, and taken in substance. The medicine need not be used after the appetite is fully restored.

Nº 81.

HYPERICUM PERFORATUM.

Common St John's-wort

HYPERICACEAE.

St. John's-worts.

No. 81.

HYPERICUM PERFORATUM.

COMMON ST. JOHN'S-WORT.

Place—Europe.
Quality—Balsamic.
Power—Astringent, anthelminthic.
Use—Hamoptysis, hypochondriasis, phthisis, and ulcers, tumors, &c.

BOTANICAL ANALYSIS.

Natural Order. Rotaceæ.—L Hypericaceae.—J.

CLASS XVIII. *Polyadelphia.* ORDER *Polyandria.*

Linn. *Sp. Pl.* 1105. Willd. *Sp. Pl.* iii. 1453. Cullen. *Mat. Med.* 173. Loud. *Ency. Pl.* 658. Raf. *Med. Flor.* ii. 229. U. S. *Disp.* 1263. T. and G. *Flor.* i. 160. Griff. *Med. Bot.* 156. Beach. *Fam. Ph.* 682. Lind. *Flor. Med.* 117. Pursh. *Flor. M. A.* ii. 377. Wood, *Class Book*, 184.

GENUS. HYPERICUM.

A name of unknown meaning. Υπερικον, Dioscorides.
SYNONYMES.—Le millepertuis (*Fr.*) Das Johannis Kraut (*Ger.*) St. Jans Kruid (*Dutch.*) Pilatro (*I.*) Corazoncillo (*Sp.*) Melfurade (*Port.*) Sweioboi (*Russ.*)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, four—five, distinct or cohering, persistent, unequal, dotted.
COROLLA. *Petals* four—five, hypogynous, æstivation twisted, veins oblique, dotted.
STAMENS. Hypogynous, indefinite in three or more parcels *Anthers* versatile.
OVARY. Single, superior. *Style* slender. *Stigma* simple.

HYPERICUM PERFORATUM.

FRUIT. A capsule or berry, many seeded
SEEDS. Indefinite, minute.

THE SECONDARY CHARACTERS.

HYPERICUM. *Sepals* five, connected at base, subequal, leaf-like. *Petals* five, oblique. *Stamens* indefinite, or numerous (sometimes few) united at base into three—five parcels with no glands between them. *Styles* three—five, distinct or united at base, persistent.

Calyx five—parted, divisions equal, subovate. *Corol* five—petalled. *Filaments* often united at the base in three or five sets. *Styles* two—five. *Capsule* membranaceous, roundish, with a number of cells equal to the number of styles. The bases of the filaments are often in groups, when they are not united.

THE SPECIFIC CHARACTERS.

HYPERICUM PERFORATUM. *Flowers* with three styles. *Stem* two-edged, branched. *Leaves* elliptical, with pellucid dots. *Sepals* lanceolate, half as long as the petals. *Segments* of the calyx lanceolate.

Erect, branching. *Stem* two edged. *Leaves* oblong, obtuse, transparently punctate. *Paniele* terminal brachiate, leafy. *Petals* longer than the acute, lanceolate calyx.

THE ARTIFICIAL CHARACTERS.

CLASS POLYADELPHIA. *Stamens* united by their filaments into more than two sets. ORDER POLYANDRIA. *Leaves* opposite punctate. *Flowers* yellow. *Fruit* a membranaceous capsule.

NATURAL HISTORY.

This extensive Genus HYPERICUM, contains herbaceous, or shrubby species, found in all parts of the world, and of which between thirty to forty are natives of North America. They all possess medicinal properties in a greater or less degree, proportionate to the abundance or otherwise of the oil, bearing glands of the flowers and leaves. Certain species having a berry instead of a capsular fruit, have been separated under the generic name of *Vismia*. These are principally natives of tropical climates, and furnish a yellow product very analogous to gamboge.

HYPERICUM PERFORATUM is a hardy plant, a native of Europe, but has been introduced on this continent, prevailing almost everywhere on pastures and dry soils both in Canada and throughout the United States, much to the annoyance of farmers,

as it has become very abundant, and is not only very difficult to eradicate, but extremely exhausting to the ground. It has a peculiar balsamic odor. Its taste is bitter, resinous and somewhat astringent. The root is perennial, fusiform and tortuous. The stem is ancipital, about eighteen inches in height, much branched, curved below, and erect above. The leaves are closely sessile, of an ovate elliptical shape, of a light green color, and conspiciously marked with numerous pellucid dots. The flowers are of a bright yellow color, arranged in a terminal corymb. The calyx is persistent, and is composed of five acute-lanceolate sepals, united at base. The corolla is of five-ovate, obtuse, sessile petals, much longer than the sepals, of a yellow color, with numerous dark glandular spots at the edges. The stamens are numerous, and divided into three sets. The anthers are small. The styles are three with very small stigmas. The fruit is a somewhat globose capsule, with three cells, and opening naturally by three valves. Seeds numerous, very small.

Everlasting John's-wort is apt to flourish undisturbed and fill the earth with seeds or roots, in readiness to spread and grow whenever the earth is moved for their reception. This plant has taxed the ingenuity of vigilant farmers in effecting its removal. It should never be allowed to perfect its seeds, and if they are ever so permitted, the farmer has suffered an enemy to steal a march upon him, which may require much time and labor to subdue.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

No complete analysis of the HYPERICUM PERFORATUM has ever yet been made, but from the experiments of Mr. Blair (*Am. Jour. Pharm. ii.* 23.) its active constituents appear to be an acrid, resinous substance, pervading the whole plant, a red oil, furnished by the gland on the petals, and some tannin. HYPERICUM is not recognized as officinal by the United States Pharmacopœia, but is so by many of the European authorities as a constituent of a variety of syrups, tinctures, &c.

The St. John's-wort was, notwithstanding, held in high estimation by the earlier writers on the Materia Medica, and numerous virtues attributed to it particularly as a febrifuge and anthelmintic. "The leaves, flowers, and seeds stamped (*says Gerard*, 1590), and put into a glass with olive oil, and set in the warm sun for several weeks together, and then strained from

those herbs, and the like quantity now put in and sunned in like manner, doth make an oil of the color of blood, which is a most precious remedy for deep wounds and sores, and those that are through the body, for sinews that are pricked, or any wound made with a venomed weapon. I am accustomed (*continues Gerard*), to make a compound oil hereof, the making of which, any one shall receive at my hands, because that I know in the world there is not a better, no, not natural balsam itself, for I dare undertake to cure any such wound as absolutely in each respect, if not sooner and better, as any man whatsoever, shall or may with natural balsam."

The plant still enjoys much reputation in some parts of Europe in the treatment of many diseases, hysteria, mania, intermittent fever, dysentery, gravel, hemorrhages, pectoral complaints, worms, and jaundice. It was also formerly held in high estimation for the cure of demoniacs, and the superstition still lingers among the vulgar in some countries. At present the plant is scarcely used except as a domestic remedy. The flowering summits are the parts employed, though the unripe capsules are possessed of the same virtues, in an equal degree, and the seeds are said to be even stronger. It is difficult to ascertain its exact value as a remedy, but from its sensible properties, and from the character of the complaints in which it has been thought useful, it may be considered independently of its astringency, as somewhat analogous in medicinal power, to the turpentines. Whatever may be the real value of this plant however, as a medicinal agent, it deserves attention, and that a fair trial should be made of it, the testimonies in its favor are so strong that it can scarcely be as inert as is now supposed, and as is observed by Cullen (*Mat. Med.*, 173), "we should not be so audacious as to neglect it, for by the sensible qualities it appears active, and there are many well vouched testimonies of its virtues, particularly of its diuretic powers."

St. John's-wort is said to exercise an injurious effect on cattle by inflaming the skin wherever the hair is white. Although this belief is very general, it is by no means certain, that the injury is owing to this plant. Is it not rather attributable to a species of Euphorbia which in almost all cases is found growing where the Hypericum abounds, the acrid juice of the former plant being fully capable of causing inflammation, whilst the oil furnished by the glands of the latter, and which is the active principle of the plant, is celebrated for its vulnerary powers.

N° 82.

GUAIACUM OFFICINALE.

Lignum vitæ. Guaiacum.

RUTACEÆ.

Ruworts.

N° 82.

GUAIACUM OFFICINALE.

LIGNUM-VITÆ, *Guaiacum.*

Place—Jamaica, Hispaniola.
Quality—Drying, somewhat acrid.
Power—Aperient, purifying, sternutatory.
Use—The *bark and resin* in syphilis, leucorrhœa, gout, scabies.

BOTANICAL ANALYSIS.

Natural Order. Gruinales—L. Rutaceæ,—J.

CLASS X. *Decandria* ORDER *Monogynia.*

Linn. *Sp. Pl.* 546. Willd. *Sp. Pl.* ii. 538. Woodv. i. 43. Lind. *Flor. Med.* 214. Stokes ii. 486. Stephenson and Churchill ii. 90. Loudon, *Ency. Pl.* 352. Raf. *Med. Flor.* ii. 225. U. S. *Dis.* 359. Griff. *Med. Bot.* 203. Per. *El. Mat. Med.* ii. 634. Beach *Fam. Phy.* 656. Kosts. *Mat. Med.* 528.

GENUS. GUAIACUM.

From *Guaiac*, the name given to the tree by the natives of Guiana.

SYNONYMES.—Gayac, Gomme-resin de Gayac (*F.*) Gemeiner Franzosenholz, Guajak-gummi (*G.*) Pokhout (*Dutch.*) Franzostrace (*Dan.*) Franzosenholta (*Swed.*) Guajaco, Gommo-resina di Guajaco (*I.*) Guayaco (*S.*) Guajaco (*Port.*)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, four—five.
COROLLA. *Petals*, four—five, rarely wanting, or none.
STAMENS. As many, or twice or thrice as many as petals inserted on the outside of a cup-like disk.
OVARY. Three—five lobed, three—five celled. *Styles* united or distinct only at base.
FRUIT. Uusually separating into its component, few-seeded carpels.
SEEDS. Not numerous.

GUAIACUM OFFICINALE.

THE SECONDARY CHARACTERS.

Guaiacum. *Calyx* five—partite, obtuse. *Petals*, five. *Stamens*, ten, with filaments naked or sub-appendiculated. *Style* and *Stigma* one. *Capsule* substipitate, five—celled, five—angled, or from abortion two to three—celled. *Seeds* solitary, fixed to the axis pendulous. *Albumen* cartilaginous, rimulose. *Cotyledons* thickish.

Sepals five, obtuse, unequal. *Petals* five, equal. *Stamens* ten. *Filaments* naked. *Style* and *Stigma* united. *Capsule* angled, two—five celled. *Leaves* abruptly pinnate.

THE SPECIFIC CHARACTERS.

Guaiacum Officinale. *Leaves*, opposite. *Peduncles* axillary one to three together, one flowered, filiform, minutely puberulous. *Sepals* five. *Petals*, five thrice the length of the sepals, oblong, bluntish, blue, hairy. *Filaments*, ten. *Anthers*, bifid at the base, arcuate, yellow. *Fruit*, a fleshy capsule.

Leaves bijugate. *Leaflets* sessile. more or less obovate, rounded at the apex, nerved, glabrous. The common *petioe* terete, channelled above. *Peduncles* axillary, one to three together, germinate.

THE ARTIFICIAL CHARACTERS.

Class Decandria.—*Stamens* ten. Order Monogynia. *Fruit*, not a legume. *Leaves* not sensitive. *Calyx* five—cleft, unequal. *Petals* five, inserted into the calyx. *Capsule* angular, three or five celled.

NATURAL HISTORY.

The Guaiacum is a native of the West India islands, growing in Cuba, St. Domingo, Jamaica and the warmer parts of America. It rises from forty to sixty feet high, and is four or five in circumference with crowded flexuose branches. The bark is thick and smooth, and of a grayish color. The wood is exceedingly hard. It is known as the *Lignum-vitæ* of commerce, used by turners in the fabrication of articles requiring density and strength. The leaves are abruptly pinnate, consisting of two or three pairs of smooth, shining, veined, obovate, dark green leaflets, almost sessile. The flowers are peduncled in a kind of umbels which spring from the divisions of the smaller branches. The calyx consists of five concave, oblong, blunt, spreading, unequal, deciduous leaves. The petals are five, of a blue color. elliptical, concave, and spreading. The stamens are erect and villous, with yellowish hooked anthers. The germen is oval, with a short style and simple stigma. The capsule is subtur-

binate, on a short pedicel, smooth, and of a pale ferruginous hue, pentagonous, with ribbed angles, and five—celled, but two or three of the cells are often abortive. The seeds are solitary.

All the parts of this tree possess medicinal qualities, but the wood and the peculiar substance afforded by it, are the only parts used. The virtues of the wood depend altogether on the peculiar matter it contains. This is spontaneously exuded from the tree, and is called native gum, it concretes in tears, which are semi-pellucid and very pure, but the greater part of it is obtained by making incisions into the trunk, or as it is termed, jagging the tree. This operation is performed in May, and the juice which flows copiously is concreted by the sun. It is also obtained by sawing the wood into billets, and boring a hole longitudinally through them, so that when one end of a billet is laid on a fire, the guaiac, melting runs through the hole from the opposite end, and is collected in a calabash. Boiling the chips or raspings in salt and water, also separates the guaiac, which as it rises to the surface may be collected by skimming.

The wood is brought to market either in large solid pieces which weigh from four to five cwt. each, and are covered with a yellowish alburnum, or it is already rasped.

The guaiac, or gum as it is improperly termed, arrives in casks and mats, the former containing from one to four cwt., the latter generally less than one cwt. each.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The *wood* of GUAIACUM is in-oderous, but when heated it emits an aromatic odor, and the taste is bitterish, sub-acrid, and biting. It is heavier than water, its specific gravity is 1,333, externally yellowish and internally of a blackish brown color mixed with green streaks. Its goodness may be ascertained by exposing it to the fumes of nitrous acid, which give it a bluish green color, if it be good, yet the decoction is not affected by nitrous acid. The *resin* or *guaiac* has a fragrant odor, with scarcely any taste, but occasions, when swallowed, a sensation of heat in the throat. It has a resinous aspect, is of a greenish brown color, externally and internally presents a mixture of greenish, reddish, and brownish tints. It is somewhat translucent, breaks with a vitreous fracture, and is easily reduced to a powder which is grey at first, but becomes green in a short time when it is exposed to the air and light, a change which appears to depend on the absorption of oxygen

The specific gravity of guaiac is 1,2289. It is sometimes adulterated with common resin and manchinal gum. The former is detected by the turpentine emitted when the suspected guaiac is thrown on hot coals; and the latter by adding to the alcoholic solution a few drops of sweet spirit of nitre, and diluting with water the guaiac is precipitated, but the adulteration floats in white striæ.

Both the wood and the guaiac are stimulant, diaphoretic, diuretic, and purgative. The wood was introduced into Europe by the Spaniards, as a remedy for lues venera, in 1508, by Gonsalvo Ferrand, and gained much celebrity from curing Ulrich Van Hutten, but it had long before been used for the same purpose by the natives of St. Domingo, and it is not certain that Van Hutten's case was one of pure syphilis, as he had been suffering from the disease from the age of nine years. It obtained so much reputation, however, that the exhibition of mercury was discontinued for a considerable time, and even in the eighteenth century its specific powers over this disease were maintained by Boerhaave, but frequent disappointments, and more correct observations have shown that it possesses no powers of eradicating the venereal virus, and that it is useful only after a successful mercurial course, for repairing the strength and vigor of the system, "and where a thickened state of the ligaments, or of the periosteum, remains, or where there are foul, indolent ulcers, or in suspending the progress of some of the secondary symptoms for a short time, as ulcers of the tonsils, erruptions and nodes. The decoction of the wood has been found more useful in cutaneous diseases, scrofulous affections of the membranes and ligaments, and in ozæna. The guaiac itself is an efficacious remedy in chronic rheumatism, and arthritic affections, as well as those diseases for which the decoction of the wood is usually given, and in every respect it may be regarded as the active ingredient of the wood. Its sensible effects are a grateful sense of warmth in the stomach, dryness of the mouth, and thirst, with a copious flow of sweat, if the body be kept externally warm, or if the guaiac be united with opium and antimonials, but when the body is freely exposed, instead of producing diaphoresis, it augments considerably the secretion of urine. It may be exhibited either in substance or in tincture. This dose is from ten grains to half a drachm, in the form of pills, or of bolus, or made into an emulsion with water by means of mucilage or yolk of egg. Larger doses purge.

№ 83.

TANACETUM VULGARE.

Tansy. common tansy.

COMPOSITÆ.

Asterworts.

N°. 83.

TANACETUM VULGARE.

TANSY, *Common Tansy.*

Place—Europe.
Quality—Bitter.
Power—Tonic, stomachic, anthelmintic.
Use—Dyspepsia, hysterics, intermittents, worms, gout, &c.

BOTANICAL ANALYSIS.

Natural Order. Compositæ Discoideæ.—L. Corymbiferæ—J.

CLASS XIX. *Syngenesia.* **ORDER** *Polygamia superflua.*

Linn. *Sp. Pl.* 1184. Willd *Sp. Pl.* iii. 1814. Woodv. i. 115. Stephenson & Churchill ii. 96. Cullen *Mat. Med.* ii. Loudon, *Ency. Pl.* 696. Raf. *Med. Flor.* ii. 266. U. S. Dis. 703. T. & G. *Flor.* ii. 414 Griff. *Med. Bot.* 407. Per. *El. Med. Bot.* 407. Beach. *Fam. Ph.* 675. Wood. C. B. 350.

GENUS. TANACETUM.

An alteration or corruption of a privative and *θανατος death*, a plant which does not perish, or possess durable flowers.

SYNONYMES.—Tanassie (*F.*) Rheinfarn (*G.*) Worm Kruid. (*Dutch.*) Rhreinfan (*Dan.*) Renfana (*Swed.*) Kiviat wrotyczowy (*Pol.*) Tanaceto (*I.*) Atanasia (*S.*) Tanasia (*Port.*) Dikajariabina (*Russ.*)

THE ESSENTIAL CHARACTERS

CALYX. Closely adherent to the ovary. The *limb* wanting, or membranaceous, and divided into bristles, hairs, &c., called *pappus.*

COROLLA. Superior, consisting of five united *petals*, either ligunate or tubular.

STAMENS. Five alternate with the lobes of the corolla. *Anthers* cohering into a cylinder.

OVARY. Inferior, one-celled, one-ovuled. *Style* two-cleft, the inner margins of the branches occupied by the *stigmas*.

FRUIT. An achenia, dry, indehiscent, one-seeded, crowned with the pappus.

SEEDS. Numerous.

THE SECONDARY CHARACTERS.

TANACETUM. *Involucre* hemispherical, imbricate, the scales all minute. *Receptacle* convex, naked. *Pappus* a slight membraneous border. *Achenia* with a large epigynous disk.

Involucre imbricate, hemispheric. *Scales* acuminate. *Rays* obsolete, three-cleft. *Egret* somewhat marginal. *Receptacle* naked.

THE SPECIFIC CHARACTERS.

TANACETUM VULGARE. *Leaves* pinnately divided. *Segments* oblong—lanceolate, pinnatifid and incisely serrate. *Heads* fastigiate—corymbose.

Leaves, doubly pinnate, gash—serrate. In the variety TANACETUM CRISPUM, *double tansy*. The *leaves* are crisped and dense.

THE ARTIFICIAL CHARACTERS.

CLASS SYNGENESIA. *Stamens* five, cohering by the tips of their anthers. ORDER POLYGAMIA SUPERFLUA. Herbaceous plants. *Flowers*, or *florets*, collected into dense heads (compound flowers). *Corollas* monopetalous of various forms.

NATURAL HISTORY

TANSY is a native of Europe, and was a favorite plant with old King Charlemagne, who took considerable pains that it should be cultivated in his domains. It is, however, naturalized in many parts of the United States, and grows wild on hills, and by the sides of roads and hedges, and in old fields. It flowers from July to September. It is also cultivated in gardens as well for medicinal and culinary, as oramental purposes. There are three varieties, the common, which answers best for the first of the

above purposes, the curled which is generally preferred for the second, and the variegated which is chiefly used for ornament.

Tansy may be propagated in spring or autumn by rooted slips, or by dividing the roots into several sets, plant them in any compartment of the kitchen or physic garden, from twelve to eighteen inches asunder. The plant continues for several years, producing abundant tufts of leaves annually. As they run up in strong stalks in summer, these should be cut down to encourage a production of young leaves low on the stem.

Tanacetum Vulgare is a perrenial herbaceous plant, the root is creeping, sending up stiff, erect stems, about two feet in height, leafy, obscurely hexagonal and striated, with alternate leaves, doubly pinnatifid, acutely cleft, somewhat downy on the under side, cased at the base, and embracing the stem. The flowers are in terminal, dense, corymbs of a bright yellow color, and flattish. The leaflets of the calyx are obtuse, with a dry scaly margin. The florets are numerous, those of the disc hermaphrodite and five-cleft, those of the margin female and trifid. The seeds are small, uniform, inversely pyramidal, pentagonal, ribbed, of an ash color, and crowned with a narrow marginate, membranaceous pappus.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Tansy has a strong disagreeable, peculiar, fragrant odor, and a warm acrid bitterish taste, somewhat resembling that of camphor. The leaves and flowers are used; they yield their peculiar qualities to water and alcohol, and in distillation with water they afford a greenish-yellow essential oil, which has in perfection the odor and taste of the plant. This oil (*oleum tanaceti*) is yellow, sometimes green, and its specific gravity is 0.952. The leaves and flowers contain also a peculiar acid which has been called *tanacetic*, volatile-oil, bitter resin, fatty oil, wax, &c. They have been analyzed by Fromherz, and by Peschier, and the constituents are as already mentioned. Their medical properties are owing to the oil and bitter resin. The tanacetic acid is crystallizable. It precipitates lyme, baryta, and oxide of lead. With a solution of acetate of copper it causes a precipitate.

Tansy produces the usual effects of the aromatic bitter tonics, which by continued administration in debilitated and relaxed conditions of the body, increase gradually the tenacity of the whole system, and thereby render the fibres more tense and

strong, and give better firmness and density to all the tissues and organs.

The leaves and flowers of Tansy are tonic, stomachic, and anthelmintic. They were formerly regarded as a powerful remedy in intermittents, dropsy, hysteria, and obstructed menstruation. There is a common belief that it acts specially on the uterus, and hence the oil has frequently been resorted to for the production of abortion, and several cases of death have ensued from the practice. A fatal case of poisoning with half an ounce of oil of tansy is recorded in the *Medical Magazine* for Nov. 1834. Frequent and violent clonic spasms were experienced, with much disturbance of respiration, and the action of the heart gradually became weaker till death took place from its entire suspension.—(*U. S. Dis. from Am. Jour. of Med. Sciences*, XVI. 256).

In medicine, the plant is rarely employed by the regular practitioner. Experience and the knowledge of better remedies have in a great measure set aside its use. An infusion of the whole herb in boiling water has been recommended as a preventative of the return of gout. It is also said that if fresh meat be rubbed with it, the flesh-fly will not injure it.

As a vermifuge the plant certainly possesses some pretensions, rather, however, as a preventative of the generation of worms, than as an agent for their removal when they have become a source of annoyance. In the investigation of the pathology of the existence of worms, various plausible abnormal conditions of the intestines have been invoked for evidence in favor of a theory which contemplates the cold slime or mucous accumulation of the intestines as the essential elements of their existence, and which supposes that without this nourishment the worms could not find means of subsistence, and that by consequence their being would be ephemeral, or at least very contingent. The prophylactic power of Tanacetum Vulgare against worms is therefore chiefly to be ascribed to its power of improving the physilogical condition of the intestines, so as to change their secretions, and thus remove these parasites.

Tansy tea (prepared by infusing two ounces of the herb in one pint of boiling water), may be taken in doses of from one to three fluid ounces. A drop or two of the oil may be added to vermifuge powders and pills. The dose of the powder is from thirty grains to a drachm, two or three times a day. The seeds are most effectual as a vermifuge.

Nº 84.

NICOTIANA TABACUM

Tolacco, Virginia tobacco

SOLANACEÆ.

Nightshades.

No. 84.

NICOTIANA TABACUM.

Tobacco, *Virginia Tobacco.*

Place—America.
Quality—Nauseous, poisonous.
Power—Anodyne, antispasmodic, narcotic, errhine.
Use—The *leaf* in wounds, scabies, tinea, cough; the *smoke* in constipation of the bowels; the *syrup* in asthma, colic, hysterics, dysentery, jaundice, dropsy.

BOTANICAL ANALYSIS.

Natural Order. Luridæ.—L. Solanaceæ.—J.

Class V. *Pentandria.* Order *Monogynia.*

Linn. *Sp. Pl.* 258. Willd. *Sp. Pl.* i. 1014. Woodv. ii. 208. Stokes i. 390. Stephenson & Churchill i. 37. Loud. *Ency. Pl.* 136. Bigelow *Am. Med. Bot.* ii. 171. Raf. *Med. Flor.* ii. 245. U. S. *Dis* 697. Griff. *Med. Bot.* 493. Per. *El. Mea. Bot.* ii. 322. Beach. *Fam. Ph.* 67. Wood, *Class Book*, 445.

Genus. NICOTIANA.

Named from John Nicot of Nismes, in Languedoc who introduced it into Europe.

Synonymes.—Le tabac (*Fr.*) Deztabak (*Ger.*) Tebak (*Dutch.*) Tobacco (*I.*) Tabaco (*Sp.*) Petume (*Brazil.*) Tamaka (*Indian.*) Tabar (*Russ.*, *Pol.*, &c.)

THE ESSENTIAL CHARACTERS.

Calyx. *Sepals*, four—five more or less united, mostly persistent.
Corolla. Regular. *Limb* four—five, cleft, plaited in æstivation, deciduous.
Stamens. four—five (sometimes one abortive), inserted on the corolla, alternate with its segments. *Anthers* bursting longitudinally, rarely by terminal pores.

NICOTIANA TOBACUM.

OVARY. Free, (superior), two-celled (four-celled in Datura) with the placenta in the axis. *Styles* and *stigmas* united.
FRUIT. A capsule or berry.
SEEDS. Numerous. *Embryo* curved, lying in fleshy albumen.

THE SECONDARY CHARACTERS.

NICOTIANA. *Calyx* urceolate, five—cleft. *Corolla* infundibuliform, regular. *Limb* five—lobed. *Stamens* five. *Stigma* emarginate. *Capsule* two-celled, two—four valved.

Calyx urceolate, sub-tubular, five—cleft. *Corol* funnel—form, five—cleft. *Limb* plaited. *Stigma* notched. capitate. *Stamens* inclined. *Capsule* two-celled, two to four-valved.

THE SPECIFIC CHARACTERS.

NICOTIANA TABACUM. Viscid—pubescent. *Leaves* lanceolate, sessile, decurrent. *Tube of the corolla* inflated at the throat *Lobes* acute.

Leaves lance-ovate, sessile, decurrent. *Flowers* acute.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* (rarely shrubby). *Stamens* alternate with petals. *Fruit* capsule or berry. *Cells* with many seeds. *Cells* two. *Æstivation* plicate.

NATURAL HISTORY.

The only plants cultivated as *Tobacco* are the species NICOTIANA TABACUM and NICOTIANA RUSTICA, the former greatly preferred. The popular narcotic which it furnishes is probably in more extensive use than any other, and its only rival is the *Betel* of the east. According to Linnæus, TOBACCO was known in Europe from 1560. It was brought to England from Tobajo in the West Indies, or Tobasco in Mexico (and hence the name) by Ralph Lane, in 1586, but only the herb for smoking. Afterwards, according to Hakluyt, seeds were introduced from the same quarter. Sir Walter Raleigh first introduced smoking, which has consequently been common in Europe for more than two hundred years. TOBACCO as used by man, says Du Tour, gives pleasure to the savage and the philosopher, to the inhabitant of the burning desert and frozen zone. Its use either in

powder, to chew, or to smoke is universal, and for no other reason than a sort of convulsive motion (sneezing), produced by the first, and a degree of intoxication by the two last modes of usage. A hundred volumes have been written against it, of which a German has preserved the titles. Among these books is that of James Stuart, King of England, who violently opposed it as injurious to health, and absolutely poisonous. The royal author styles it "a custom loathsome to the eye, hateful to the nose, harmfull to the brain, dangerous to the lungs, and in the black stinking fume thereof, nearest resembling the horrible Stygian smoke of the pit that is bottomless." Notwithstanding, however, such opposition, smoking together with the use of snuff, has spread not only through civilized, but among savage nations, and there is now probably no single product of the vegetable kingdom which is so extensively employed. All the sovereigns of Europe, and most of those of other parts of the world, derive a considerable part of their revenue from tobacco.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The recent leaves of Tobacco possess very little odor or taste, but when dried their odor is strong, narcotic, and somewhat fœtid, their taste bitter and extremely acrid. When well cured, their color is yellowish green. They emit sparks in burning, and give out a suffocating smoke, and when distilled, yield an essential oil of a green color, on which their medicinal properties are supposed to depend, and which is said to be a virulent poison. This oil is dissipated by the long coction of tobacco with water; yet in distillation with ether, water or alcohol, no oil comes over. By infusion, however, it yields its active principles to all of these fluids. Its deflagration shows the presence of nitrate of potassa, and muriate of potassa has been discovered in its inspissated juice. According to Vanquelin, tobacco appears to contain albumen or gluten, supermalate of lime, acetic acid, nitrate and muriate of potassa, muriate of ammonia, a red matter, soluble in alcohol and water, a green fecula, and a peculiar substance, on which the properties of the plant appear to depend, and which has been therefore named *nicotin*. This substance is colorless, acrid, has the odor of tobacco, and like it occasions violent sneezing. It is volatile, poisonous, and produces colorless solutions with alcohol and water, from which it is thrown down by tincture of nutgalls.

NICOTIANA TABACUM.

Tobacco is narcotic, sedative, emetic, diuretic, cathartic, and errhine, whether it be taken into the stomach, or externally applied. The three first mentioned properties are sufficiently obvious, even from the effects which smoking or chewing it produces on persons unaccustomed to its use. From Mr. Brodie's experiments, the infusion of tobacco produces its effect in the heart through the medium of the nerves. The symptoms are very severe, sickness, headache, extreme debility, cold sweats, and sometimes even convulsions. The production of such a state of the habit, however, being useful for relieving violent spasmodic constriction, tobacco is advantageously employed in obstinate constipation, ileus, suppression of urine, and incarcerated hernia, when other remedies fail of affording relief. The smoke is either thrown into the rectum by means of a pair of bellows of peculiar construction, or an infusion of the leaves is exhibited in the form of enema. From its narcotic power also, the smoking or chewing tobacco has been found useful in allaying the pain of toothache; and smoking is sometimes found useful in shortening and rendering more supportable the paroxysm of spasmodic asthma. The infusion has been used as an emetic, but the practice cannot be recommended, and notwithstanding the success of some practitioners, who employ it in dropsy and dysuria, its general effects are too violent for internal exhibition, and it is not equal as a diuretic, either to squill or foxglove, which are more manageable remedies. In dysuria, however, its antispasmodic properties are of advantage, and consequently its use in that complaint is less objectionable. The external application of a strong infusion of tobacco, or of a cataplasm of the moistened leaves themselves is sometimes employed as a local stimulant in porrigo, scabies and some other cutaneous eruptions, but even in this mode of using it, tobacco is apt to induce the same effect as when internally administered.

Tobacco, as a sternutatory is the basis of all the kinds of *snuff* generally used. The powdered leaves snuffed up the nostrils, excite vehement sneezing, and promote a considerable discharge from the nostrils, answering all the purposes for which errhines are employed. As a luxury, snuff has been used for more than two hundred years in Britain, in great quantities. After the use of it has become habitual, it cannot be relinquished without considerable risk, arising from the suspension of the artificial discharge it produces, as Dr. Cullen observed from his own experience.

N° 85.

RHEUM PALMATUM.

Rhubarb.

POLYGONACEÆ.

Buckwheats.

N°. 85

RHEUM PALMATUM.

PALMATED RHUBARB, *Rhubarb.*

Place—Thrace, Scythia, Mongal, on the borders of China
Quality—Styptic, bitter, nauseous.
Power—Purging, astringent, stomachic.
Use—The *root* in diarrhœa, leucorrhœa, debility of the stomach, hypochondriasis, and vermifuge.

BOTANICAL ANALYSIS.

Natural Order. Oleraceæ.—L. Polygonaceæ.—J.

CLASS IX. *Enneandria.* ORDER *Trigynia.*

Linn. *Sp. Pl.* 531. Willd. *Sp. Pl.* ii. 489. Woodv. *Med. Bot.* 662. Stephenson & Churchill 25. Loud. *Ency. Pl.* 334. Raf. *Med. Flor.* ii. 256. U. S. *Dis.* 587. Griff. *Med. Bot.* 513. Per. *El. Mat. Med.* ii. 272. Beach. *Fam. Ph.* 671. Kost. *Mat. Med.* 129. Wood, *Class Book*, 473. Lind. *Flor. Med.* 358.

GENUS. RHEUM.

This name was ingeniously supposed by Linnæus to have been derived from ῥέω, to flow, because the root causes a discharge of bile. It nevertheless was formed from RHA the ancient name of the Volga.

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* united at base, imbricate in æstivation.
COROLLA. None.
STAMENS. Definite, inserted on the calyx near the base.
OVARY. Free, with a single erect ovule. *Styles* or *stigmas* several.

RHEUM PALMATUM.

FRUIT. *Achenium*, usually triangular.
SEEDS. *Embryo* generally on one side of farinaceous albumen

THE SECONDARY CHARACTERS.

RHEUM. *Calyx* colored, six—sepaled, persistent. *Stamens* nine. *Styles* three. *Stigmas* multifid, reflexed. *Achenia* three-angled, the angles margined.

Calyx none *Corol* six-cleft permanent. *Nut* one, three-sided.

THE SPECIFIC CHARACTERS.

RHEUM PALMATUM. *Leaves* roundish cordate, half palmate. *Petiole* long, channelled, green, with purple ribs.

Leaves palmate, acuminate.

THE ARTIFICIAL CHARACTERS.

CLASS ENNEANDRIA. *Stamens* nine. ORDER TRIGYNIA. *Herbs* with alternate leaves and stipular sheaths. *Calyx* colored.

NATURAL HISTORY.

This species, RHEUM PALMATUM, is a native of Central Asia. It grows on the snowy mountains of Boutan and of Dauria, and arrives at considerable perfection when cultivated either in England or the United States. The plant is of easy culture by cuttings, or by seed. The soil best suited is one that is light, rich, deep, and moderately moist.

The root is perennial, thick, oval, branched, externally brown, and internally of a deep yellow color. The stem, which rises eight or ten feet in height, is erect, round, hollow, jointed, very slightly furrowed, and maculated with small oblong purple streaks, the lower leaves stand upon long smooth petioles, are numerous, large, divided into five segments, which are deeply sinuated, toothed, and strongly ribbed; the petiole being divided at its apex into the five midribs of the segments, of a deep green color, rough above, and pale and villous below: those of the stem spring from the joints, are also petiolate, and gradually lessen in size towards the top of the stem. There is a sheathing stipule, or *ochrea* at the base of each stem leaf. The flowers spring from the axilla of the base in numerous panicled clusters; they

appear in May. The corolla is divided into six obtuse segments of a greenish white color, tinted with light pinkish purple. The filaments are nine, slender, the length of the corolla, and furnished with oblong double anthers. The style is short, with three reflected capitate stigmas. The germen is a triangular seed enclosed in a capsule with three membranous reddish margins or alæ.

Most of the information that has been collected with respect to the cultivation, preparation, &c. of rhubarb is derived from the Bucharians, the family of Tartars who deal in the article, and no European has been enabled to verify it. The Russian variety grows naturally in the mountainous districts, either on the sides of the mountains, or on their summits in soils of different kind. It prefers, however, light and sandy loose earth. The most vigorous plants are those which grow in the shade. The Siberian variety, on the contrary, thrives best in the sun. The roots are collected twice annually in the spring and the autumn. The age of the root before being removed from the earth should be at least six years and sometimes even more. When taken up it is immediately cleansed, deprived of its bark, and dried under cover in the shade, but exposed to the air—this may be done artificially. The drying process is the most difficult, and at the same time, the most important in the preparation of rhubarb. There is a difference in the appearance of the two articles mentioned, which is owing to the preparation. The Russian is angulated by the removal of the exterior with a sharp instrument—it is simply perforated for inspection. The Chinese is in rounded masses, smooth from attrition, which is accomplished in a barrel and perforated to be suspended on cords to dry.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Good *Russian* or *Turkey* rhubarb has a peculiar, somewhat aromatic odor, and a bitter slightly astringent, subacid taste, feels gritty between the teeth when chewed, and tinges the saliva of a bright yellow color. It breaks with a rough, hackly fracture, is easily pulverized, and affords a powder of a bright buff yellow color. It should not be porous but rather compact and heavy. Water at 212° takes up twenty-four parts in sixty, forming an infusion of a brown color, nearly clear, and reddening litmus paper. Alcohol extracts two seven tenths from ten parts, and gives a tincture of a rich golden color, which

reddens tincture of litmus, is not altered in its transparency by the addition of water, and strikes a blackish olive hue with solution of sulphate of iron, but no immediate precipitate falls. Sulphuric ether takes up 1.5 in 10 parts of this rhubarb. The tincture is of a golden yellow hue, and when evaporated in water, leaves a thin pellicle of yellow resin and abundance of extractive dissolved in the water, combined however with tannin. According to the analysis of M. Henry, it contains a yellow coloring matter, a bland oil, fecula, a small quantity of gum, tannin, lignine, oxalate of lime, supermalate of lime, sulphate of lime, a salt of potassa, and oxide of iron. *East India* or *Chinese* rhubarb has a strong odor, and is more nauseous to the taste than the Turkey, breaks with a more compact and smoother fracture, and affords a powder of a redder shade. Water takes up thirty parts in sixty, the infusion is not so deep colored as that of Russian rhubarb, is more turbid, and reddens also litmus paper. Alcohol extracts four parts in ten. The tincture is of a much deeper color, and brownish, and gives a deeper red to litmus tincture, is rendered slightly turbid by the addition of water, and strikes a green, not blackish olive with sulphate of iron, which it also quickly and copiously precipitates. Ether takes up two parts in ten, the tincture is deeper colored, and when evaporated on water, affords the same results except that the compound of tannin and extractive is more soluble.

Rhubarb is a mild purgative, and may be given to the youngest infants. Its operation is quickened by the addition of neutral salts and calomel, the purgative powers of which it also reciprocally augments, so that a compound, formed of small portions of rhubarb and a neutral salt or calomel, acts with more certainty and quicker than large doses of either separately taken. Rhubarb is particularly adapted for the majority of cases of diarrhœa, as it evacuates any acrid matter that may be offending the bowels, before it acts as an astringent. Externally it has been applied by friction to produce its purgative effects, and its powder is sometimes sprinkled over ulcers to assist their granulation and healing. It colors the urine in the space of twenty minutes after it is taken, and may be detected by the aid of an alkali. It disappears after an hour or two, but re-appears owing to a second absorption from the colon. Bradner Staart also affirms that it can be detected in the urine after using a bath impregnated with it. The Chinese use it medicinally, but chiefly to color a spirituous liquor.

N.º 86

THEA CHINENSIS.

Tea The tea plant.

TERNSTRŒMIACEÆ.

Teaworts.

No. 86.

THIA CHINENSIS.

TEA, *The Tea Plant.*

Place—Asia.
Quality—Styptic.
Power—Strengthening, drying, diuretic.
Use—The leaves in drowsiness, convulsions, calculus, obesity. Hurtful to weak stomachs.

BOTANICAL ANALYSIS.

Natural Order. Missellaneæ.—L. Ternstrœmiaceæ.—J.

CLASS XIII. *Polyandria* ORDER *Monogynia.*

Linn. *Sp. Pl.* 735. Woodv. *Med. Bot.* 116. Raf. *Med. Flor.* ii. 267. U. S. Disp. 1299. Griff. *Med. Bot.* 149. Per. *El. Mat. Med* ii. 664. Lind *Flor. Med.* 120. Wood, *C. B.* 205.

GENUS. THEA.

From the Greek θεα, originating in the Chinese Tcha or Tsja, their name for Tea.

SYNONYMES Thi (*F.*) Der, Thee [*Ger.*] The [*It.*]

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, five or seven, concave, coriaceous, deciduous, the inner often the largest.
COROLLA. *Petals*, Five—six, or nine, not equal in number to the sepals.
STAMENS. Indefinite or numerous, hypogynous. *Filaments*, distinct or united into one or more setts.
OVARY. Superior, or with several cells. *Styles* three—seven more or less combined.
FRUIT. Two—seven-celled, capsular.
SEEDS. Large, few attached to the axis.

THIA CHINENSIS.

THE SECONDARY CHARACTERS.

THEA. *Sepals*, five–six rounded. *Petals*, six–nine sessile. *Stamens*, numerous. *Capsule*, three-celled, seven-valved, each cell containing one to two seeds, and opening at the upper part.

Calyx, five or six-leaved. *Corol.*, six or nine petalled. *Capsule*, three-seeded.

THE SPECIFIC CHARACTERS.

THEA CHINENSIS. *Leaves*, alternate, smooth, ovate-oblong. *Flowers*, axillary, either single or aggregated on short glabrous peduncles.

Corolla, larger than the *Calyx*. *Stamens* numerous. *Flowers*, *six-petalled*. *Leaves*, oblong-oval, rugose.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens* twenty or more, arising from the receptacle (hypogynous.) ORDER MONOGYNIA. *Calyx* imbricate in æstivation. *Trees.*

NATURAL HISTORY.

This genus derives its name from its Chinese appellation, and, in a commercial point of view, is one of the most important of the vegetable kingdom. But, notwithstanding this importance, and the numerous notices of it and its cultivation, no little uncertainty exists whether it contains one or more species, or in other words, whether the black and the green teas are the product of the same or of different species: many modern botanists, however, are of opinion that all are but varieties of one species, which is therefore named THEA CHINEÑSIS.

Notwithstanding the many different kinds of Tea exported from China, there is good reason to believe that they are all the produce of one species (as has already been hinted), and that the differences of quality are the result of variations in the character of the plant, which are induced by differences of soil, climate &c., in the extensive tract over which it is grown,—and of variations in the age of the trees, the time of gathering the leaves, and in the mode of preparing them. The tea districts of

China extend from about the 27th to the 33rd degree of north latitude, but the plant may be cultivated in regions more distant from the equator, if the climate be mild and equable. The plant is raised from seed, and the first crop of leaves is gathered in the third year. After the shrubs have attained the age of six or seven years, their produce becomes so inferior that they are removed to make room for a fresh succession. The leaves are gathered from one to four times during the year, according to the age of the tree. Most commonly there are three periods of gathering: the first commences about the middle of April, the second at midsummer, and the last in August. The leaves that are earliest gathered are of the most delicate color and most aromatic flavor, with the least portion of either fibre or bitterness. Leaves of the second gathering are of a dull green color, and have less valuable qualities than the former, whilst those which are last collected are of a dark green and of inferior value. The quality is further influenced by the age of the wood on which the leaves are borne, and by the degree of exposure to which they have been accustomed. Leaves from young wood, and those most exposed are always the best, as is readily understood on physiological principles. The leaves when gathered are partly dried by the air and sun, and partly by artificial heat, and are carefully rolled up by the hand. It is commonly believed that the distinctive character of green tea is imparted to it by being dried upon sheets of copper. For this belief, however, there is no foundation in fact, since copper is not used for the purpose, and the most careful application of chemical tests fails to discover any such impregnation.

The history of commerce does not furnish any parallel to the circumstances which have attended the introduction of Tea into Great Britain. The leaf was first imported by the Dutch East India Company, in the early part of the seventeenth century, but it does not appear to have found its way to England until about the year 1650. The first historical notice of it is in an Act of Parliament of the year 1660, in which it was enumerated as one of the beverages sold in coffee-houses, on which a duty was to be paid. That it was not then a common drink is evident from an entry in the private journal of Mr. Pepys, Secretary to the Admiralty, who says, 25th Sep. 1661: "I sent for a cup of tea (a China drink) of which I had never drunk before." In 1664 the British East India Company sent *two pounds* of tea as a present to the King. In 1667 the Company

imported 100 lbs. Since then the consumption has gone on regularly increasing. In 1734 the quantity imported was about 632,000 lbs., in 1768 it was nearly seven million pounds. In 1800 it was twenty millions, and during the last four years of the East India Company's charter, the average quantity imported was over thirty-one millions. Since the abolition of the monopoly, the consumption has increased more rapidly, the amount imported having nearly reached fifty million pounds.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Volumes have been written for and against this article. Some authors attributing to it the most pernicious qualities, such as inducing nervous tremors, dyspepsia, dropsy, &c., whilst others again have been as lavish in its praise. That the use of tea may be abused, there can be no doubt; but it is equally certain that a moderate employment of it, and especially of the better kinds of black tea (which, it may be noticed, is the only kind used by the Chinese) far from being prejudicial, has a positive power in calming nervous irritation, and aiding the digestive functions, and giving, after fatigue, a new life and tone to the system. The green tea is very apt to affect the nervous system of those unaccustomed to its use, but at the same time it does not appear that its constant employment is attended with any ill effects.

Tea is often administered warm, to aid in the production of diaphoresis, but does not seem to have any greater power than any other mild infusion. From several analyses made of it, it is shown to consist of a bitter extractive, mucilage, resin, gallic acid, and tannin, and a peculiar principle called *Theine*, on which its properties depend. This substance, which is also found in coffee and chocolate, as well as in the Mate, is a highly azotized principle, and has probably a much greater influence on the system in aiding the assimilation of food than is generally supposed; and hence the great use made of the various plants containing it, by almost all nations.

The properties of tea are not of so decided a character as to render it capable of very extensive application as a medicine, and its almost exclusive use is as a grateful beverage at the evening and morning meals. As a medicine, however, tea may sometimes be given advantageously in diarrhæa, and a strong infusion will often be found to relieve nervous headache.

No 87.

FRASERA CAROLINENSIS.

American Columbo Indian lettuce &c

GENTIANACEÆ.

The Gentian Tribe.

No 87.

FRASERA CAROLINENSIS.

AMERICAN COLUMBO, *Indian Lettuce, &c.*

Place—United States.
Quality—Bitter.
Power—(*when fresh*) Emetic, cathartic, (*when dry*) Tonic, antiseptic, febrifuge.
Use—Consumption, dyspepsia, jaundice, scurvy, &c.

BOTANICAL ANALYSIS.

Natural Order. Stellatæ.—L. Gentianaceæ.—J.

CLASS IV. *Tetrandria.* ORDER *Monogynia.*

Linn. *Sp. Pl.* 735. Woodv. *Med. Bot.* 116. Raf. *Med Flor.* i. 196. U. S. *Dis.* 336. Griff. *Med. Bot.* 462. Per *El. Mat. Med.* ii. 354. Beach. *Fam. Ph.* 662. Kosts. *Mat. Med.* 452. Barton. *Veg. Mat. Med.* ii. 103. Wood. *C. B.* 205. Lind. *Flor. Med.* 120.

GENUS FRASERA.

In honor of John Fraser, an American cultivator of exotics, to whose exertions the gardens, particularly of London, are indebted for many rare American plants.

SYNONYMES.—Frasera Colombo, [*F.*] Colombo Wurzel [*Ger.*]

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, four—five—ten, united at base, persistent.
COROLLA. Usually regular. Limb divided into as many lobes as there are sepals, mostly twisted in æstivation.
STAMENS. Issuing from the tube of the corolla, as many as its lobes, and alternate with them.
OVARY. One celled, sometimes rendered apparently two-celled by the introflexed placentæ. *Style*, united into one, or wanting *Stigmas* one—two.
FRUIT. *Capsule* many-seeded.
SEEDS Small. *Embryo* straight, with fleshly albumen.

FRASERA CAROLINENSIS

THE SECONDARY CHARACTERS.

FRASERA. *Flowers*, mostly tetramerous. *Petals* united at base, oval, spreading, deciduous, each with one or two bearded or bicular glands in the middle. *Style* one. *Stigmas* two, distinct. *Capsule* compressed, one-celled. *Seeds* few, imbricate, large, elliptic, margined.

Calyx deeply four-parted. *Corol.* four-parted, spreading. *Segments* with bearded glands in the middle. *Capsule* compressed, sub-margined, one-celled, two-valved. *Seeds* few, imbricated, oval, with a membranaceous margin.

THE SPECIFIC CHARACTERS.

FRASERA CAROLINENSIS. *Stem* tall, erect, glabrous, branched above. *Leaves* verticillate, oblong-lanceolate, acutish, sessile, feather-veined, entire or wavy. *Panicle* compound, pyramidal, leafy, verticillate. *Calyx* segments acute, shorter than the oblong, obtusish petals. *Gland* solitary, oval orbicular.

Leaves whorled, or opposite. *Flowers* in clusters.

THE ARTIFICIAL CHARACTERS.

CLASS TETRANDRIA. *Stamens* four. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* (rarely shrubby.) *Stamens* alternate, with petals. *Fruit* capsule. *Capsule* one-celled, many-seeded.

NATURAL HISTORY.

The American Columbo is found in great abundance in the rich glades of the Western States, where it grows most luxuriantly, sometimes attaining the height of ten feet. It is one of the tallest and handsomest of our native herbaceous plants, having a large pyramid of crowded flowers, sometimes three or four feet in length. It is a true triennial, the stalk and flowers not shooting up till the third year. There is, however, some difference of opinion as to its duration, Rafinesque stating that it is strictly a triennial, whilst other botanists agree in considering it to be a biennial. It was first discovered by Wm. Bartram, who speaks of it in his travels under the name of Indian lettuce. The habitation of this plant is variously described by different botanists. Michaux has observed it in wet or swampy places, in "Paludosis Carolinæ." Pursh says it is found "in the swamps of Lower Carolina, and on the borders of the lakes of Pennsyl-

vania and New York." Mr. Nutall says, "in the dry and open woods of Pennsylvania and New York, in certain localities, it is abundant." Dr. Wm. Short says, "it grows in the barrens or prairies of Kentucky." The late Dr. Barton observed it growing in great abundance on the west side of the Genesee river in the State of New York. It is said to be common in some parts of Upper Canada, but the States of Kentucky and Tennessee yield it in profusion. From the abundance which grows in the neighborhood of Marietta, in Ohio, it is sometimes called Marietta Columbo. According to Walter, Michaux, Mr. Wm. Bartram, and Mr. Elliott, it grows in Carolina and Georgia. The latter gentleman mentions that it has been found in Fairfield district and in Abbeville.

The root is large, yellow, tuberose, hard, horizontal, spindle-shaped, sometimes two feet long, with few fibres. The whole plant is perfectly smooth. The stem from five to ten feet high, round, erect, solid, with few branches except at the top, where they form a pyramid of flowers. Leaves in whorls; the radical or root leaves form a star spread upon the ground, from five to twelve in number, from ten to eighteen inches long, and from three to five broad, constituting the whole plant in the first two years, or before the stem grows. The stem leaves are whorls, from four to eight, smaller than the radical leaves. Flowers yellowish white, numerous, forming a large pyramidal panicle, peduncles leafy or bracteate. Calyx deeply four cleft, spreading, segments lanceolate, acute, persistent, nearly as long as the corolla. Corolla with four elliptic segments flat and spreading, margin somewhat inflexed, a fimbriated pit in the centre of each. Stamens four, alternate, with the segments, filaments short, subulate, anthers oval, oblong. Ovary compressed, bearing a short style with two short stigmas. Capsule yellowish, oval, acuminate, compressed, margin thin, two-valved, one-seeded. Seeds flat, elliptical winged. The seeds grow in pods, shaped like a horse-bean, and are much like parsnip seeds.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The American Colombo has been thought to resemble the foreign article, both in medical properties as well as in appearance, but experience has not confirmed the high estimate which was at one time formed of its virtues, and though perhaps it is still much employed both in regular and domestic practice in

some parts of the country by several eminent practitioners, yet it has failed entirely to supplant the tonic of Mozambique.

The part that is officinal are the roots, and these in a fresh state often weigh several pounds. As found in the shops, they are in slices, somewhat resembling those of the Colombo, having a thick yellow bark, and a yellowish spongy meditullium. The taste is pure bitter, without any aroma. They may be distinguished from Colombo by their lighter color, and by affording a dark green precipitate with the salts of iron. A chemical examination has been made of this root by Mr. Douglass (*Am. Jour. Pharm.* vi. 177), and it was found to contain bitter extractive gum, tannin, gallic acid, resin, a fatty matter, sugar, &c. &c. Water and diluted alcohol extract its virtues, and the tincture throws down a precipitate upon the addition of water, but is not disturbed by tincture of galls, thus affording additional means of distinguishing the root from Colombo.

Colombo Root is emetic and cathartic when fresh, tonic, antiseptic and febrifuge when dry. It has a sweetish bitter taste like gentian. The leaves are also bitter. It yields its bitterness to water, but proof spirits is its proper menstruum. It may be given in powder or infusion. The dose of the former is from thirty grains to a drachm, that of an infusion made in the proportion of an ounce of the bruised roots to a pint of boiling water, is one or two fluid ounces, to be repeated several times a day. The root should be collected from the fall of the second year to the spring of the third year of its growth.

The root is used with considerable success in diseases of the stomach and debility. It avails in intermittents, like other pure bitters, and is extensively used in the Western States in fevers, colics, griping, nausea, relaxed stomach and bowels, indigestion, &c. As a purgative it is substituted for rhubarb in many cases, particularly for children and women enceinte. Cold water is said to add to its efficacy and prevent nausea, and vomiting. A teaspoonful of the powder in hot water and sugar will give immediate relief in case of heavy loading a weak stomach. It is a good corrector of the bile, alone or united with other bitters.

The Colombo leaves occasion sweat copiously when laid on the forehead, and will commonly relieve headache. This will also apply to any kind of inflammation, rheumatism, &c. Such is the efficacy of this root, says Peter Smith, that when they who take it recover, they are indeed well and need no other medicine.

Nº 88.

CEANOTHUS AMERICANUS.

Jersey-tea, red-root.

RHAMNACEÆ.

Buckthorns.

Nº. 88.

CEANOTHUS AMERICANUS.

JERSEY TEA, *Red-root.*

Place—United States.
Quality—Diuretic.
Power—Purifying, purgative.
Use—Dysentery, syphilitic complaints.

BOTANICAL ANALYSIS.

Natural Order. Dumocæ.—L. Rhamnaceæ.—J.

CLASS V. *Pentandria.* ORDER *Monogynia.*

Linn. *Sp. Pl.* 284. Loud. *Ency. Pl.* 178. Raff. *Med. Flor.* ii. 205. U. S. *Dis.* 1240. T. & G. i. 264. Griff. *Med. Bot.* 218. Per. *El. Mat. Med.* 354. Beach. *Fam. Ph.* 662. Kost. *Mat. Med.* 485. Wood, *Class Book*, 217.

GENUS. CEANOTHUS.

Κεανωθος is a name used by Theophratus to designate a prickly plant, from κεω, to prick, because it pricks at the extreme parts.

SYNONYMES.

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* four or five, united at base, valvate in æstivation.
COROLLA. *Petals* four or five distinct, cucullate or convolute, inserted into the orifice of the calyx. Sometimes wanting or none.
STAMENS. Opposite the petals, four or five.
OVARY. Superior, or half superior, with an erect ovale in each cell.
FRUIT. A capsule, drupe or berry.
SEEDS. Not numerous.

CEANOTHUS AMERICANUS.

THE SECONDARY CHARACTERS.

CEANOTHUS. *Calyx* tubular, campanulate, five-cleft, separating transversly after flowering. *Petals* five, saccate-arched, with long claws. *Stamens*, mostly exserted. *Style*, mostly three-cleft. *Capsule* obtusely triangular, three-celled, threo seeded, surrounded at base by the persistent tube of the calyx.

Petals scale-like, vaulted. *Claws* long standing in the five-cleft, cup-form, calyx. *Stigmas* three. *Berry* or *capsule* dry, three-grained, three-celled, three-seeded, three-parted, opening on the inner side.

THE SPECIFIC CHARACTERS.

CEANOTHUS AMERICANUS. *Leaves* oblong-ovate, serrate, three veined. *Panicles* axillary, elongated.

Leaves ovate, acuminate, serrate, three-nerved, pubescent beneath. *Panicles* axillary, long-peduncled, sub-corymbed.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Polypetalous. *Flowers* inferior, regular. *Stamens* opposite to the petals. *Shrubs*. *Stem* thorny. *Calyx* four-five cleft.

NATURAL HISTORY.

This almost American genus consists of shrubs or shrubby plants. The roots of the whole of them are large, reddish, and astringent. The leaves are alternate, usually ovate or elliptical, serrate or entire, persistent or deciduous. The flowers are white, blue, or yellowish in umbellike fascicles, which are aggregated at the extremity of the branches. There are several varieties, differing principally in the form of the leaves. It is probable that the medical properties of all the species are very much the same, though one only has attracted attention. The New Jersey tea is found in all parts of the United States, in copses and dry-woods, and very abundant on the barrens at the west. The plant flowers from June until September, is of very easy culture, and of very little beauty.

The root of the CEANOTHUS AMERICANUS is large and dark red. The stem is shrubby, suffruticose, from two to four feet high, slender, with many round, smooth branches, the younger of which are pubescent. The leaves are three-nerved, rounded, or

a little cordate at base, ovate or oblong-ovate, somewhat acuminate at the apex, serrate, nearly smooth above, and whitish, tomentose beneath, the pubescence of the veins and petioles somewhat reddish, they are thrice as long as broad, very downy, with soft hairs beneath. Flowers minute, in crowded panicles from the axils of the upper leaves. The calyx is white, five-cleft, and the upper portion separates by a transverse line, leaving the tube adhering to the fruit. The corolla is formed of five saccate, arched petals, which are longer than the calyx, and with filiform claws at base. The stamens are five, enclosed in the curiously vaulted corolla, exserted and bearing ovate, two-celled anthers. The ovary is three-angled, and surrounded with a ten-toothed disk. The styles are three, united to the middle, but diverging above. The fruit is dry and coriaceous, obtusely triangular, three-celled and three-seeded. The seeds are convex externally, and concave within, the cavity marked with a longitudinal line.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The CEANOTHUS AMERICANUS is a well-known plant and is considerably celebrated for having been much used during the Revolutionary war of the United States, as a substitute for the Chinese tea, whence its common name. The leaves when dried have an odor very much resembling that of the black tea of commerce, and are said to form an excellent substitute for it.

The leaves of the Jersey tea plant are slightly bitter, and somewhat astringent. The root is much more active, and was very highly esteemed among the Indians who used it as an astringent and febrifuge. It was afterwards very much employed also as a remedy in gonorrhœa, and even syphilis. In the first of these complaints, it is stated by Ferrien that a cure is effected in two or three days, and in the latter, even inveterate cases yield to it in fifteen. It is given in the form of decoction made in the proportion of two drachms of the root to a pint of water. Adamson also observes that he has employed it in these diseases with considerable success. These statements receive confirmation, in part at least, from the success that has attended this method of cure in private and domestic practice, as well as by several physicians and practitioners of the country.

In a communication to the Boston Medical and Surgical Journal (Sept., 1835), Dr. Hubbard speaks in very high terms

of a decoction of the leaves as a wash and gargle in the aphthœ of children, and in those cases of sore mouth subsequent to fever, and states that he was successful with it even where all other means had failed. He also found it very beneficial in those cases of ulceration of the fauces attendant on scarlatina, in these he used it in combination with Mayweed, *Maruta cotula*, and borax. He further adds that as an astringent in dysentery, he found it fully as efficacious as the Hardack, *spirea tomentosa*, It may be used in diarrhœa, cholera infantum, and other complaints in which astringents are indicated.

With this testimony in its favor, CEANOTHUS AMERICANUS certainly deserves a more extended trial, and should it be found to merit, even in part, what has been said of it, it will rank as an important article of our native Materia Medica.

It may be proper to mention that the *Ceanothus caruleus* is considered as a powerful febrifuge in Mexico, and that the *Ceanothus decolor* is employed in dysentery in Senegal.

Men of observation and science ought to be employed to explore the country with a view to its geology, mineralogy, botany, zoology, and agriculture. They ought not only to examine with their own eyes, but to avail themselves of local information to be derived from intelligent men in every part of the State. By these means a mass of valuable and authentic information may be obtained which can in most cases be acquired in no other way.

The celebrated Linnæus often expressed a wish to visit America, in order to explore its vegetable productions. His disciple, Kalm, travelled through this country in 1748 for that purpose. Since the revolutionary war several European princes have sent scientific men here to make collections and observations on our natural history. In fact, several of the most valuable and interesting observations we possess, were made by them, who devoted themselves almost exclusively to this special object—the unfolding the bright volume of Creation, the pages of which are daily and hourly exhibited, "written," to use the impressive words of Lord Bacon, "in the only language which hath gone forth to the ends of the world, unaffected by the confusion of Babel."

It may be safely affirmed that Botany is capable of affording more to interest and instruct, more to refresh and relax the well-disposed mind, than any other pursuit. It is therefore important to encourage and promote this pleasure.

№ 89.

DRIMYS WINTERI.

Winter's Bark.

MAGNOLIACEÆ.

Magnoliads.

No. 89.

DRIMYS WINTERI.

WINTER'S BARK.

Place—South America.
Quality—Aromatic.
Power—Stimulant, tonic.
Use—Scurvy, and as a condiment.

BOTANICAL ANALYSIS.

Natural Order. Winteraceæ.—L. Magnoliaceæ.—J.

CLASS XIII. *Polyandria* ORDER *Polygynia*.

Willd. *Sp. Pl.* ii. 1239. Woodv. *Med. Bot.* 647. Stephenson & Churchill, iii. 178 U. S. Dis. 744. Griff. *Med. Bot.* 100. Per. *El. Mat. Med.* ii. 742. Kost. *Mat. Med.* 443. Lind. *Flor. Med.* 26. Wood, C. B. 149.

GENUS. DRIMYS.

From the Greek Δριμυς, on account of its hot and pungent flavor.
SYNONYMES.—Cannelles de Winter (*F.*), Winterana (*L*), Cortiza Winterana (*S.*)

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, three—six, deciduous, colored like the petals.
COROLLA. *Petals*, six—twelve, hypogynous, in several rows, imbricate in æstivation.
STAMENS. Indefinite hypogynous, distinct, with short filaments, and adnate anthers.
OVARY. Several, in many rows upon an elongated torus.
FRUIT. Follicular or baccate, one—two seeded.
SEEDS. Attached to the inner suture of the carpels, from which (*in Magnolia*) they are suspended by a long, delicate funiculus

DRIMYS WINTERI.

THE SECONDARY CHARACTERS.

Drimys. *Calyx*, two—three cleft. *Corolla* two—three *petals*, (sometimes more). *Stamens*, numerous, clavate. *Anthers* two-celled. *Ovaries* four—eight. *Carpels* conjested, baccate, many seeded.

Calyx splitting unequally. *Petals* numerous. *Stamens* club-shaped, with terminal two-lobed anthers. *Style* none. *Berries* superior, aggregate. *Seeds*, several in a double row.

THE SPECIFIC CHARACTERS.

Drimys Winteri. *Leaves*, alternate, obtuse, oblong, glaucous beneath. *Peduncles* simple, approximated or very short, divided into elongated pedicels.

Leaves alternate, petiolate, oblong, obtuse, entire, smooth. *Flowers* small, solitary, or in clusters of from three to four. *Bark* of the trunk gray, that of the branches green.

THE ARTIFICIAL CHARACTERS.

Class Polyandria. *Stamens* twenty or more, arising from the receptacle (hypogynous.) Order Polygynia. *Leaves* never peltate. *Trees* with large showy flowers.

NATURAL HISTORY.

Winter's Bark was brought before the medical profession in a paper read to the Medical Society of London, in 1779, by the facetious John Fothergill, M. D. In this paper is published a history of the discovery of the tree, with a botanical account of it, drawn up by the celebrated Dr. Solander. It appears that the tree and the bark were unknown until the return of Captain John Winter from a voyage to the South Seas, in 1579. Captain-Winter was the commander of the ship Elizabeth, which sailed with Sir Francis Drake in 1577, but after having passed through the Straits of Magellan, on the 8th of October of the following year, was obliged by stress of weather to return to the Straits, and remaining there some time, procured the bark, which Clusius, in honor of him, named *Cortex Winteranus*.

Other navigators, upon visiting the Straits, noticed the tree, but nothing definite was known of its botany until in 1691, Mr.

George Handasyd, upon his return, presented some specimens to Sir Hans Sloane, who gave a description and figure in the Philosophical Transactions. But it appears that the flowers and fruit were wanting, and a systematic location was impossible, until in 1768, Captain Wallis, of the Dolphin, brought some perfect specimens, which came into the hands of Dr. Solander, who, from these, and his own observations drew up his description.

"DRIMYS WINTERI is one of the largest forest trees upon Terra del Fuego; it often rises to the height of fifty feet. The branches do not spread horizontally, but bend upwards, and form an elegant head of an oval shape. The leaves come out without order, of an oval, elliptic shape, quite entire, obtuse, flat, smooth, shining, of a thick, leathery substance, evergreen; on the upper side, of a lively deep green color, and of a pale bluish color underneath, without any nerves, and their veins scarcely visible; they are sometimes narrower near the footstalks, and there their margins are bent downwards. In general the leaves are from three to four inches long, and between one and two broad; they have very short footstalks, seldom half an inch long, which are smooth, concave on the upper side, and convex underneath. From the scars of the old footstalks, the branches are often tuberculated. The peduncles, or footstalks for the flowers, come out of the axilla foliorum, near the extremity of the branches; they are flat, of a pale color, twice or three times shorter than the leaves, now and then support only one flower, but are oftener near the top divided into three short branches, each with one flower. The *bracteæ* are oblong, pointed, concave, entire, thick whitish, and situated at the base of each peduncle. *Calyx* it has none, but in its place the flower is surrounded with a *spathaceous* germ of a thick leathery substance, green, but reddish on the side which has faced the sun; before this germ bursts, it is of a round form, and its size is that of a small pea. It bursts commonly so that one side is higher than the other, and the segments are pointed. The *corolla* consists always of seven petals, which are obtuse, oval, concave, erect, white, have small veins, and are of an unequal size, the largest scarcely four lines long; they very soon fade, and drop off almost as soon as the germ bursts. The *filaments* are from fifteen to thirty, and are placed on the flat end side of the receptacle; they are much shorter than the petals, and gradually decrease in length towards the sides. The *anthera* are large, oval, longitudinally divided into two, or as if each was made up of two oblong *antheras*. The

germina are from three to six, placed above the receptacle, turbinated, or of the shape of an inverted fig, flat on the inside, and somewhat higher than the stamina; they have no styles, but terminate in a stigma, divided into two or three small lobes."

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The bark of the DRIMYS WINTERI attracted the attention of navigators, from its warm, spicy, aromatic properties; and in the treatment of scorbutic disease, which broke out in vessels going into the Straits of Magellan, was a very valuable auxiliary. It is rarely brought into the market as a drug, and has become very scarce in commerce. It is sometimes confounded with *Canella Alba*, from which it differs in color, as it is pale yellowish, or dull reddish-gray, with elliptical dull brown spots externally, and brown internally. It has an aromatic odor and a warm bitterish taste. Winter's Bark was found by M. Henry to contain resin, volatile oil, coloring matter, tannic acid, several salts of potassa, malate of lime, and oxide of iron. The presence of tannic acid and oxide of iron serves to distinguish it essentially from the *Canella Alba*, as these chemical evidences are present in one case and not in the other.

DRIMYS WINTERI is stimulant, aromatic, and tonic, and may be employed in all cases in which the *Canella* and *Cinnamon* are indicated. It was much praised by the discoverer as an anti-scorbutic. Ferrein states that the natives of Terra del Fuego employ it to prevent a cutaneous disease to which they are subject, from eating seals' flesh.

Some confusion is apparent among the authors who have treated upon the tree, with respect to its name; hence the different appellations by which it has been described. The term *Winterana Aromatica* was bestowed by Linnæus, in commemoration of its discoverer; in so doing, however, he mistook it for the *Canella Alba*, and gave the account of the fructification of that plant. Browne, however, had stamped that genus with the name of *Canella*. Foster having obtained the parts of fructification, gave to the plant the name of DRIMYS WINTERI, from its hot and pungent flavor. Murray, in his *Linn. Syst. Veg.* gave the generic name *Wintera*, which he preferred to the original Linnæan one, and finally De Candolle has adopted the name of Foster, in imitation of Lamarck. The species which Lamarck calls Drimys Punctata is a variety only.

Nº 90.

SOLANUM TUBEROSUM.

Common Potato.

SOLANACEÆ.

Nightshades.

No 90.

SOLANUM TUBEROSUM.

COMMON POTATO.

Place—South America.
Quality—Viscous.
Power—Anti-spasmodic, slightly narcotic.
Use—Chronic rheumatism, scurvy, &c.

BOTANICAL ANALYSIS.

Natural Order. Luridæ.—L. Solanaceæ.—J.

CLASS V. *Pentandria.* ORDER *Monogynia.*

Loud. Enc. Pl. 156. Griff. *Med. Bot.* 482. Per. *El. Mat. Med.* ii. 336. Wood. *C. B.* 448.

GENUS SOLANUM.

Etymology uncertain. Some derive it from Lat. SOL, sun, and Greek *ἄνευ*, (without having reference to the nightshade species. (Others from Lat. SOLARI, to comfort; though the application is not evident.

SYNONYMES.—Pomme de terre [*F.*], Die Kartoffeln [*Ger.*], Aardappelen [*Dutch*], Tertufibianci [*It.*], Batatas Inglezas [*Sp.*], Batata de terra [*Port.*]

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, four—five, more or less united, mostly persistent.

COROLLA. Regular. *Limb* four—five cleft, plaited in æstivation, deciduous.

STAMENS. Four—five (sometimes one abortive), inserted on the corolla, alternate with its segments. *Anthers* bursting longitudinally, rarely by terminal pores.

OVARY. Free (superior) two-celled, (four-celled in Datura), with the placenta in the axis. *Styles* and *Stigmas* united into one.

FRUIT. *A capsule* or berry.
SEEDS. Numerous. *Embryo* curved, lying in fleshy albumen.

THE SECONDARY CHARACTERS.

SOLANUM. *Calyx* five—ten parted, persistent. *Corolla* rotate subcampanulate. *Tube* very short. *Limb* plicate, five—ten lobed. *Anthers* erect, slightly cohering or connivent, opening at the top by two pores. *Berry*, two—six celled, sub-globose or depressed, often torose. *Seeds* numerous.

Calyx five to ten parted, permanent, *Corol* bell or whell-form, five-lobed, plaited. *Anthers* thickened, partly united, with two pores at the top. *Berry* containing many seeds, two to six-celled.

THE SPECIFIC CHARACTERS.

SOLANUM TUBEROSUM. *Root* tuberous. *Stem* herbacecus. *Segment of the leaves* unequal, the alternate ones minute. *Flowers* subcorymbed. *Corolla* five-angled.

Stem wing-angled, unarmed. *Leaves* interruptedly pinnate. *Leaflets* entire. *Flowers* subcorymbed. *Roots* knobbed—tuberous.

THE ARTIFICIAL CHARACTERS.

CLASS PENTANDRIA. *Stamens* five. ORDER MONOGYNIA. Monopetalous. *Flowers* inferior. *Corolla* regular. *Herbs* (rarely shrubby.) *Stamens* alternate, with petals. *Fruit* capsule or berry. *Cells* with many seeds. *Cells* two. *Æstivation* plicate.

NATURAL HISTORY.

This most valuable plant is suppposed to be a native of South America, and to be found in a wild state in elevated places in the tropical regions, and in the more temperate districts of the western coasts of that country. It appears probable that the potatoe was first brought into Europe, from the mountainous parts of South America, in the neighborhood of Quito, where they were called *papas*, to Spain, early in the 16th century. From Spain, where they were called *battatas*, they found their way to Italy, and there received the same name as the truffle, *taratoufli*. From Italy they went to Vienna, through the Governor of Mons, in Hainault, who sent some to Clusius, in 1598. To England the potato found its way from North

America, being brought from Virginia by the colonists sent out by Sir Walter Raleigh in 1584, and who returned in July 1586; "and probably," says Sir Joseph Banks, "brought with them the potato." Gerarde in his Herbal, published in 1597, gives a figure of the potato under the name of Potato of Virginia, whence, he says, he received the roots; and this appellation it appears to have retained, in order to distinguish it from the battatas or sweet potato, *Convolvulus Battatas*, till the year 1640, if not longer. Gough says that the potato was first planted by Sir Walter Raleigh, on his estate of Youghall, near Cork, and that they were soon after carried into Lancashire. Gerarde and Parkinson, however, mention them as delicacies for the confectioner, and not as common food. Even so late as Bradley's time, they are spoken of as inferior to skirrets and radishes.

The use of the potato, however, became more and more known after the middle of the 18th century, and has greatly increased in all parts of the world. It is in very general use in Holland, and many parts of France and Germany, and is increasing rapidly in Russia. In Spain and the East and West Indies, they are not much cultivated, owing to the heat of the climate, but in all the temperate parts of North America, Australasia, and South America, they are grown in abundance. In China they are cultivated, but not extensively. Indeed no root hitherto discovered is so well adapted for universal use as the tubers of the potato; for, having no peculiarity of taste, and consisting chiefly of starch, their farina is nearly that of grain.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The SOLANUM TUBEROSUM, or *Potato*, is of more interest as an article of diet than as a medicinal agent, though the stalks possess the narcotic qualities of the other species, and even the tubers contain a certain portion of the alkaloid. This appears to be confined to their epidermis, and is greatly increased in quantity where the potato is exposed for any time to the action of the light, in which case the epidermis assumes a greenish color, and the poisonous principle is so much developed as to render the root unfit for food. The water in which potatoes are boiled contains *solanina.* The potato contains much starch, which is contained in a cellular tissue; this starch, which is the principal nutritious ingredient of the tuber, is used as a substitute

for arrow-root, and is also so manufactured as to resemble and be sold for sago. The tissue of potatoes is cellular,—each cell contains from ten to twelve grains of starch. Both in the cells and in the intercellular spaces is an albuminous liquid. By boiling the cells are separated, the starch-grains absorb the albuminous liquid, swell up, and completely fill the cells, while the albumen coagulates and forms irregular fibres, which are placed between the starch-grains. Potatoes in which these changes are complete, are called *meally*, while those in which the liquid is only partially absorbed, and the coagulations imperfectly effected, are denominated *doughy*, or *watery*.

Potatoes have been repeatedly subjected to chemical examination; their principal constituents are starch, starchy fibrin, albumen, gum, acids, salts, and water. The relative proportions vary with the season, the varieties of the potatoe, &c. *Potato-starch* consists of particles of varied shapes, and sizes—the normal form is probably ovate. Their size varies from one six-hundredth to one thirtieth of a line in diameter. They are characterized by concentric rings, observed on their surface, and which Fritzche regards as indications of concentric layers, of which he asserts these grains to be composed. The hilum is circular. The cracks observed on some of the larger grains proceed usually from the hilum.

Sugar is sometimes manufactured from potatoes. By fermentation potatoes yield a vinous liquid (*potato-wine*) of good quality. By distillation this yields *potato-spirit*, from which a volatile oil (*oil of potatoes*) has been extracted. An extract obtained from the stalks and leaves of potatoes is said to possess narcotic properties, in doses of two or three grains, but the cases are not perfectly satisfactory.

The tubers of potatoes when boiled are a most valuable article of food, both for men and animals. Those of good quality are not only perfectly innocuous but highly nutritious, and easy of digestion. In the raw state they have been found less nutritive for animals, while on man they are said to prove laxative and diuretic, and to excite slightly the nervous system. The process of cooking is probably useful in two ways, by rendering the starch digestible, and secondly by extracting some noxious matter. The potato in a raw state, eaten as a salad with vinegar, has proved of much benefit on ship-board as a preventative of scurvy. An extract of the leaves is recommended in chronic rheumatism, and pains of the stomach and bowels.

Nº 91.

CHELIDONIUM MAJUS.

Common Celandine, pilewort, tetterwort.

PAPAVERACEÆ.

Poppyworts.

No 91.

CHELIDONIUM MAJUS.

Celandine, *Pilewort, Tetterwort, etc.*

Place—Europe.
Quality—Bitter, acrid, caustic.
Power—Diuretic, diaphoretic
Use—Jaundice, dropsy, herpes, etc.

BOTANICAL ANALYSIS.

Natural Order. Rhœadeæ.—L. Papaveraceæ.—J.

Class XIII. *Polyandria.* Order *Monogynia.*

Linn. *Sp. Pl.* 723. Woodv. *Med. Bot.* I. 140 Stephenson and Churchill II. 86. Loud. *Ency. Pl.* 460. Raf. *Med. Flor.* II. 207. *U. S. Dis.* 1240. Griff. *Med. Bot.* 129. Per. *El. Mat. Med.* II. 687. Beach. *Fam. Ph.* 650 Wood, *Class Book*, 156. *T.* and *G. Flor.* I. 162.

Genus CHELIDONIUM.

From the Greek χελιδών, the swallow, the plant being supposed to flower with the arrival of that bird, and to perish with its departure. The English word *Celandine* appears to be a corruption of *Chelidonium.*

Synonymes.—La chelidoine [*F.*], Das scholkraut [*Ger.*], Schelkruid [*Dutch*], Celidonia [*It.*], Celidonia, [*Sp.*], Svaleurt, [*Dan.*]

THE ESSENTIAL CHARACTERS.

Calyx. *Sepals*, two, rarely three, deciduous, imbricated in æstivation.
Corolla. *Petals*, four, rarely five or six hypogynous.

STAMENS often indefinite or numerous, but some multiple of four, rarely polyad-lphous. *Anthers*, innate.
OVARY, solitary. *Style*, short or wanting. *Stigmas*, two, or if more, stellate upon the flat apex of ovary.
FRUIT, either pod-shaped, with two parietal placentæ, or capsular with several.
SEEDS, indefinite or numerous, minute. *Embryo*, minute at the base of oily albumen.

THE SECONDARY CHARACTERS.

CHELIDONIUM. *Sepals*, two, suborbicular. *Petals*, four, suborbicular, contracted at base. *Stamens*, twenty-four—thirty-two, shorter than the petals. *Stigma*, one, small, sessile, bifid. *Capsule*—silique—form, linear, two-valved, one-celled. *Seeds* crested.

Calyx two-leaved, caducous. *Corol*, four-petalled, silique like. *Capsule*, one-celled, two-valved, linear. *Seeds* crested, many.

THE SPECIFIC CHARACTERS.

CHELIDONIUM MAJUS. *Leaves* pinnate. *Leaflets* lobed. *Segments* rounded. *Flowers* in umbels.

Umbels axillary, peduncled. *Leaves* alternate, pinnate, lobed.

THE ARTIFICIAL CHARACTERS.

CLASS, POLYANDRIA. *Stamens*, twenty or more, arising from the receptacle (hypogynous). ORDER, MONOGYNIA. *Ovaries*, compound. *Placentæ*, parietal. *Sepals*, two (or three). *Juice* colored.

NATURAL HISTORY.

CHELIDONIUM is a genus of perennial herbs, furnished with a yellowish acrid juice, and containing probably but a single species, which is a native of Europe, but has become extensively naturalized in the United States and elsewhere.

Common Celandine is a pale green, and fleshy perennial herbaceous plant, growing in meadows and waste places, by running brooks, and on wet lands, flowering throughout the

summer. It rises to the height of from one to two feet—has many tender, round, green, watery stalks, with large joints, very brittle and transparent. Leaves smooth, glaucous, spreading, consisting of two—four pairs of leaflets, with an odd one. Leaflets irregularly dentate and lobed, the partial stalks winged at base. Umbels thin, axillary, pedunculate. Petals elliptical, entire yellow, and very fugacious, like every other part of the flower. The flowers are succeeded by pods, which, when fully ripe, burst suddenly, or, if compressed by the fingers, they will instantly fly to pieces, and scatter the seed; hence, *Celandine* is sometimes also called *Touch-me-not.*

The plant is of remarkable easy culture.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The whole plant, CHELIDONIUM MAJUS, is very brittle, and exudes, when broken, an orange colored fœtid juice. Its taste is intensely bitter and acrid, occasioning a sense of burning in the mouth and fauces, which lasts for some time. If applied to the skin, the juice produces inflammation, and even vesication. The whole plant is used; the root is more powerful than the stem, and is the part most generally approved. The active principle is soluble both in water and alcohol, and although not volatile, is somewhat diminished by drying. According to an analysis by M. M. Chevallier and Lassaigne (*Jour. de Pharm.*, III. 451), the plant afforded a bitter resinous substance of a deep yellow color—a kind of gum-resin of an orange color, and bitter, nauceous taste, mucilage, albumen, and various saline substances, besides free malic acid and silica. Dr. Probst, of Heidelberg, has more recently found in it a peculiar acid, denominated *Cheledonic acid*; two alkaline principles, one of which forms neutral salts with the acids, and is called *Chelerythrin*, in consequence of the intense redness of its salts; the other unites with, but does not neutralize the acids, and is named *Chelidonin*; and lastly, a neutral, crystallizable, bitter principle, which, from its yellow color, is called *Chilidoxanthin* Of these principles, chelerythrin appears to rank among the acrid narcotic poisons (*Annal. der Pharm.* XXIX. 113).

Celandine is an acrid purgative, possessed also of diuretic, diaphoretic, and expectorant properties. In over doses it produces unpleasant effects, and is by some considered poisonous

By the ancients, it enjoyed a very high reputation, and was thought to be particularly efficacious in the removal of obstructions of the liver, in promoting expectoration, and in the cure of chronic cutaneous affections. Miller (*Compend. Herb.*), says, it is operative and cleansing, opening obstructions of the liver and spleen, and of great use in curing the jaundice and scurvy. Outwardly it is used for sore eyes, to dry up rheum, and to take away specks and films, and also against tetters and ringworms, and scurfy breakings out. It may not be as effectual in the treatment of these various affections as is stated, but is certainly possessed of much activity, and has been unduly neglected. "There is no doubt," says Withering, "but a medicine of such activity will one day be converted to more important purposes."

According to the observations of numerous German practitioners, its beneficial results in scrofula are unequivocal. Wendt and Kuntzmann have given cases where it proved completely successful in this disease (*Jour. Hufland*, 1813). As a drastic and hydragogue purgative it appears fully equal to gamboge, and might replace it in all cases in which the foreign article is used. It has also been recommended as an external application to the feet in those œdematous swellings succeeding fevers. Recamier is of opinion that it has a peculiar elective action on the spleen, and hence, is very effectual in removing engorgements of that viscus.

Externally the juice has long been known as a caustic for the removal of warts and corns, which it destroys by stimulating them beyond their vital powers. The juice is also said to be very efficacious in stimulating and healing old and indolent ulcers, speedily removing fungous flesh, and giving a healthy action to the torpid and indolent granulations. Hildanus, Ethnuller, Geoffroy, and others, attest the powers of the juice, when diluted with some bland liquid in specks and opacities of the cornea. A cataplasm of the bruised leaves has also been successfully used in herpes and obstinate psora. The dose of the dried root or herb, is from thirty grains to a drachm, that of the fresh root one or two drachms, and the same quantity may be given in infusion. The watery extract, and the expressed juice, have also been employed. The dose of the former is from five to ten grains—that of the latter from ten to twenty drops. In each case the dose is to be gradually increased until the effects of the remedy are experienced.

№ 92.

COLCHICUM AUTUMNALE.

Meadon saffron, naked lady.

MELANTHACEÆ.

Melanths.

No. 92.

COLCHICUM AUTUMNALE.

MEADOW SAFFRON—*Naked Lady.*

Place—Europe.
Quality—Strong smelling, acrid.
Power—Narcotic, diuretic, purgative.
Use—Dropsy, gout, piles, rheumatism.

BOTANICAL ANALYSIS.

Natural Order. Spathaceæ.—L. Melanthaceæ.—J.

CLASS VI. *Hexandria.* ORDER. *Trigynia.*

Linn. *Sp. Pl.* 485. Willd. *Sp. Pl.* II. 272. Woodv. *Med. Bot.* 759. Stephenson and Churchill, II. 70. Loud. *Ency. Pl.* 292. *U. S. Dis.* 255. Griff. *Med. Bot.* 644. Per. *Et. Mat. Med.* II. 92. Lind. *Flor. Med.* 589.

GENUS. COLCHICUM.

From *Colchis*, says Dioscorides, where this plant grows in abundance

SYNONYMES.—Colchique d'automne [*F.*]. Die zeitlose [*Ger.*], Wildi saffraan [*D.*], Colchico [*It.*], Villorita [*Sp.*], Colchico [*Port.*], Beswremennoi zwjet [*Russ.*], Rozsiad [*Pol.*]

THE ESSENTIAL CHARACTERS.

PERIANTH regular, in two series, each of three segments, which are distinct or united at base, generally involute in æstivation.

STAMENS six, with extrorse anthers.

OVARY, three-celled, nine-many-ovuled. *Styles* distinct, or wanting. *Stigmas* undivided.

FRUIT. *Capsule* or *Berry*, three-celled, generally with septicidal dehiscence.

SEEDS, with a membraneous testa, and dense fleshy albumen.

THE SECONDARY CHARACTERS

COLCHICUM. *Perianth* single tubular, very long, rising from a spathe. *Limb* campanulate, six partite petaloid. *Capsule* three-celled. *Cells* united at the base.

SPATHE. *Corolla* six-parted, with a rooted tube. *Capsules* three, connected, inflated.

THE SPECIFIC CHARACTERS.

COLCHICUM AUTUMNALE. *Form* ovate, solid, fleshy. *Leaves* dark green, smooth, obtuse, long, somewhat carinate. *Flowers* several, radical, leafless, of a purple color. *Capsules* three, distinct. *Seeds* whitish, polished.

Leaves plane, broadly lanceolate, erect. *Fruit* oblong, elliptical. *Seeds* small, sperical, internally white.

THE ARTIFICIAL CHARACTERS.

CLASS HEXANDRIA. *Stamens* six. ORDER TRIGYNIA. Endogens. *Calyx* and *Corolla* similarly developed. *Flowers* conspicuous, mostly colored. *Ovary* many-seeded.

NATURAL HISTORY.

MEADOW-SAFFRON is a native of the temperate parts of Europe, generally found growing in moist, rich meadow-grounds. and flowering in September. The fruit appears in the following spring or summer.

The *cormus*, commonly called the bulb or root, is solid, egg-shaped, and covered with a brown membranous coat. The leaves which appear in spring, are radical and spear-shaped, about five inches long and half an inch broad at the base. They wither away entirely before the end of summer, and are

nevertheless preceded by the flower, which appears in autumn without any leaves; and from this circumstance the plant is sometimes called "*Naked Lady.*" It is, however, proper to state, that the bulb from which the flowers spring, is the offset of that from which the leaves have decayed. There is no calyx. The *corolla*, which is of a pale, pinkish lilac color, springs directly from the bulb, and consists of a tube about five inches long, two thirds of which are sunk in the ground, and a limb divided into six lanceolate keeled segments. The filaments are half the length of the segments of the corolla, subulate, united to the upper part of the tube, and supporting yellow erect anthers. The stigmas are revolute. The fruit is a three-lobed, three-celled capsule, on a thick short peduncle. The impregnated germen remains under ground, close to the bulb, till the following spring, when it rises in its capsular form above the surface, accompanied by the leaves. The seeds are ripe about the end of June.

The thick old bulb begins to decay after the flower is perfectly expanded; and the new bulbs, of which there are always two formed on each old bulb, are perfected in the following June, from which time until the middle of August they may be taken up for medicinal use. The bulbs, when mature, on being cut transversely, yield a milky-looking acrid juice, which produces a beautiful cerulean blue color, if rubbed with the alcoholic solution of guaiacum.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The recent bulb of this plant has scarcely any odor. When it is dug up at a proper season of the year, the taste is bitter, hot, and acrid, occasioning a warm sensation in the stomach, even when taken in a small quantity. At other seasons, however, and in some soils and situations, it possesses very little acrimony, and thence the contradictory opinions which authors have given of it. Its acrimony resides in a peculiar alkali, which can be separated from the other principles, and has been named *veratrine* (veratria) by M. M. Pelletier and Caventou, who discovered it. The veratrine is obtained in form of a white powder; little soluble in water, but very soluble in alcohol; it combines with acids, but the neutral salts are not crystallizable. The other component parts of the bulb are the following: a fatty matter, malic acid, a yellow coloring matter,

gum, starch, inulin in great abundance, and liguin. Vinegar and wine are the best menstrua for extracting the active qualities of the bulb. A deposit forms in the wine, which is extremely acrid, exciting nausea and griping, and ought to be removed, as its removal does not alter the virtues of the medicine. The seeds contain veratria, and yield it up to wine, vinegar, and alcohol.

COLCHICUM AUTUMNALE possesses diuretic, purgative, and narcotic properties. It is the *hermodactylon* of the ancients. In Europe, where it was recommended to notice by Baron Stoerck, it is a favorite remedy in dropsy, particularly hydrothorax, and in humoral asthma. But as it does not differ in its mode of action from squill, and is more uncertain in its operation, it has not been much used in that complaint in this country. In gout and rheumatism, however, its efficacy has been fully ascertained, and in allaying the pain it may be almost said to possess a specific property. It operates on the bowels chiefly, stimulating the orifice of the common gall duct in duodenum, so as to produce copious bilious evacuations; and acting on the nerves, it diminishes the action of the arterial system. The petals of the flower and the seed, possess the same medicinal properties as the bulb. In the seed the veratria exists in the testa or husk, and, consequently, the seeds should not be bruised in preparing the wine or tincture with them.

The dose, in substance, is from two to eight grains, which may be repeated every four or six hours, till the effects of the medicine are obtained. The medicine, however, is generally given in the state of vinous tincture.

To effectually preserve the virtues of the plant, MEADOW-SAFFRON, the bulb, as soon as possible after it is dug up, should be cut into transverse slices on clean white paper, distinct from one another, without heat, or at a very low temperature. The test of the drug being good and properly dried, is the appearance of the blue color on rubbing it with a little distilled vinegar, and the alcoholic solution of guaiacum. The slices also should not appear deeply notched or panduriform, as this is the mark of the bulb having begun to empty itself for the nourishment of the young bulbs, and, consequently, to suffer in its medicinal powers from the chemical change which, at this period, its contents must necessarily undergo for the nourishment of the offsets. It should be preserved in slices in well-stopped bottles

Nº 93.

PISSAMPELOS PAREIRA.

Velvet leaf, Ice vine.

MENISPERMACEÆ.

Menispermads.

No. 93.

CISSAMPELOS PARIERA.

PAREIRA BRAVA—*Velvet Leaf, Ice Vine.*

Place—South America.

Quality—A sweet bitter.

Power—Diuretic, demulcent, purifying.

Use—Calculus, difficulty of passing water, arthritis, goat, dropsy, jaundice, &c.

BOTANICAL ANALYSIS.

Natural Order. Sarmentaceæ.—L. Menispermaceæ.—J.

CLASS. XXII. *Diœcia.* ORDER *Monadelphia.*

Linn. *Sp. Pl.* 1473. Woodv. *Med. Bot.* 82. De Candolle Prod. I. 533. Flor. *Med.* V. 262. Loudon, *Ency. Pl.* 848 Raf. *Med. Flor.* II. 209. *U. S. Dis.* 532. Griff. *Med. Bot.* 106. Per. *El. Mat. Med.* 739. Lind. *Flor. Med.* 372.

GENUS. CISSAMPELOS.

From κισσος, the Greek name of the Ivy, and αμπελος vine, a plant partaking of the nature of the former in its foliage, and of the latter in its fruit.

SYNONYMES—Liane *à* coeur [*F.*], Die grieswurzel [*Ger.*], Touwdruif [*Dutch*] Caapeba [*Port*].

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, three-eight in a double series, two-four in each, imbricated in æstivation, hypogynous, deciduous.

COROLLA. *Petals*, one-eight, hypogynous, usually as many as the sepals, rarely wanting or none.

STAMENS distinct or monadelphous, equal in number to the Petals and opposite to them, or three or four times as many. *Anthers*, innate and consisting of four globose lobes.
OVARY, usually solitary, sometimes two-four.
FRUIT, a drupe, globose-reniform.
SEED, solitary, uncinate.

THE SECONDARY CHARACTERS.

CISSAMPELOS *Diœcious*. MALE. *Sepals*, four in a double series. *Petals* four, united into a cup-shaped corolla, with an entire margin. *Stamens*, united into slender columns, dilated at the apex, bearing two two-celled anthers, opening horizontally. *Cells*, placed end to end, and forming a four lobed, four-celled annulus round the top of the column. FEMALE. *Calyx* of one lateral sepal. *Corolla* of one petal in front of the sepal. *Ovary* solitary. *Stigmas*, three. *Drupe*, obliquely reniform, but compared, wrinkled round its margin. *Seed*, solitary, uncinate. *Embryo* long, terete, enclosed in a fleshy albumen.

Flowers, diœcious. STERILE FLOWERS. *Sepals*, four in a double series. *Petals* four, united into a cup-shaped corolla. *Stamens* five. *Anthers* connate. FERTILE FLOWERS. *Sepal* one, rounded. *Petal* one, placed before and but half the length of the sepal, truncated, hypogynous. *Fruit*, a one-seeded berry.

THE SPECIFIC CHARACTERS.

CISSAMPELOS PAREIRA. *Leaves*, peltate, subcordate, ovate, articulate, silky-pubescent beneath. MALE. *Sepals* four. *Nectary* entire. *Filament* one. *Crest* very short. *Anthers* five united in a capitate body. FEMALE. *Racemes* larger than the leaf. *Sepal and Petal* solitary. *Ovary*, ovate, villous. *Berry* globose, hispidulous.

Leaves peltate, orbicular, cordate, villous. STERILE FLOWERS. racemose. FERTILE FLOWERS. spicate longer than the leaves.

THE ARTIFICIAL CHARACTER.

CLASS DIŒCIA. *Stamens* apart from the pistils in different flowers upon different plants. ORDER MONADELPHIA. *Herbs*. Exogens, Diœcious. *Fruit*, a drupe. *Stamens*, more than ten. *Leaves*, peltate. Climbing, suffruticose plants. *Racemes* axillary.

NATURAL HISTORY.

Pareira Brava is a native of South America and the West India Islands. It is well known in Jamaica, where it grows in abundance in the mountainous districts, by the name of *Velvet-leaf*. It is also spoken of by Ainslie as a native of the East Indies, but it appears that the plant to which he refers is *Cissampelos mauritiana*, which is closely allied, both in botanical characters and in medicinal qualities to the plant under consideration. This plant was first made known by Marcgraf and Piso in 1648, who met with it in Brazil. The name given by them for the root is *Caapeba*. In 1688, it was sent to Paris by M. Amelot, the French Ambassador at Portugal. Some difference of opinion exists with regard to the species or varieties affording Pareira root. Linnœus made two species of the plant, founded upon the characters of the leaf. I. *Cissampelos Pareira* with petioles one to two inches long, villoas, cylindrical, with a remarkable curveture at bottom, inserted in many individuals into the leaves at a small distance from the base, so as to make them appear peltate or obicular. II. *Cissampelos Caapeba* with petioles inserted into the lower edge directly. Poiret by close examination, united them. According to Merat and De Lens, some other species, regarded as distinct, may be merged in it as varieties. The East India species may be different. Caapeba is the name which the root bears in South America.

The *Ice-vine*, is a climbing shrub, attaining a great size and covering even the tallest trees with its foliage. The root is woody and branching. The stem is round, smooth, or with a closely appressed tomentum. The leaves are large, peltate, subcordate, ovate, articulate, of a dark green, and smooth above and silky pubescent beneath. The flowers are unisexual; the males, with four sepals and four petals, forming a cup-like corolla, with an entire margin. The stamens are united, bearing connate anthers opening horizontally. The female flowers have but a single sepal and petal. The ovary is solitary, surmounted with three stigmas. The fruit is a round or reniform hispid scarlet berry.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

Pareira was introduced into medical practice by the Portuguese, and at one time was much employed in diseases of the

bladder and kidneys, and even considered as a powerful lithontriptic, its virtues were so highly thought of, that Helvetius declares that calculi of a large size had completely disappeared under its use, and that the operation of lithotomy was no longer required.

The part used in medicine is the root which as found in commerce, is generally in large billets, very tortuous, of a dark color externally, and of a yellowish hue within. The axis is not central, and a section displays a number of concentric layers, traversed by many radiating lines, between which are triangular bundles of woody fibres and ducts. The taste is sweetish, somewhat aromatic, but leaving a bitter and unpleasant impression in the mouth. The smell is very faint. PAREIRA has been analyzed by Feneulle, (*Journ. de Pharm.*) It was found to contain a soft resin, *yellow bitter principle*, brown coloring principle, vegeto-animal matter, fecula, supermalate of lime, nitrate of potash, and some ammoniacal and mineral salts. Wiggers more recently, in 1838, announced the discovery of a new vegetable alkaloid, which he calls *Cissampelin*, but its properties have not been described. The yellow bitter matter is supposed to be the active principle.

The medical properties are those of a tonic and diuretic, demulcent, and purifying. It has been employed with some advantage in affections of the urino-genital organs, and respectable authority asserts that more good has been effected by this root in cases of this character, than by uva ursi. In chronic inflammation of the bladder, the testimony of Sir B. Brodie, (who was one of the first to resume its use,) is strongly in its favor, he says, " I am satisfied that it has great influence, lessening very materially the secretion of the ropy mucus, which is itself a very great evil, and I believe diminishing the inflammation and irritability of the bladder itself." He recommends it to be given in decoction, to which some tincture of Hyoscyamus may be added. Dr. T. F. Betten, Philadelphia, has also employed it successfully in similar cases.

It is also given in powder, in doses of from half a drachm to a drachm, but the infusion or decoction is a far more eligible mode of administration. An extract and a tincture have been prepared from it. The tincture may be made by maserating one part of the root in five parts of alcohol. Dose, a fluid drachm. The aqueous extract may be given in the dose of from ten to thirty grains.

Nº 94.

CAPPANS SPINOSA.

The caper shrub, capes

CAPPARIDACEÆ.

Capparids.

No. 94.

CAPPARIS SPINOSA.

THE CAPER SHRUB—*Capers*

Place—Europe.
Quality—Dry, somewhat bitter.
Power—Stimulant, antiscorbutic, aperient.
Use—Hypochondriasis, paralysis.

BOTANICAL ANALYSIS.

Natural Order. Putamineæ.—L. Capparidaceæ.—J.

CLASS XIII. *Polyandria.* ORDER *Monogynia.*

Linn. *Sp. Pl.* 720. Loudon, *Ency. Pl.* 458. U. S. *Dis* 1280. 1281. Griff. ***Med. Bot.*** 136. Blacken, *herb*, 417. Nat. syst. 2*ed.* 61. *Bot. Mag.* 291. Lindl. ***Flor. Med.*** 94.

GENUS. CAPPARIS.

From its Arabic name KABAR, from which the Greeks made καππαρις.

SYNONYMES—Le caprier [*F.*], Die Kapernstaude [*Ger.*], Kappers [*Dutch*]. Cappari [*It.*], Alcaparro [*Sp.*], Alcapparra [*Port.*], Kapersowoy Kust [*Russ.*]

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals* four.
COROLLA. *Petals* four, cruciate, unguiculate, hypogynous, more or less unequal.

CAPPARIS SPINOSA.

STAMENS. Six—twelve, or some multiple of four, almost perigynous. *Torus* small, often elongated, bearing a single gland.

OVARY often stipitate, of two united carpels. *Styles*, united into one. *Stigma*, discoid.

FRUIT, either pod-shaped and dehiscent or fleshy, and indehiscent. *Placentæ*, usually two.

SEEDS many, reniform. *Albumen* wanting. *Embryo* curved. *Cotyledons* foliaceous.

THE SECONDARY CHARACTERS.

CAPPARIS. *Calyx.* *Sepals*, four-parted, spreading oblong, obtuse, concave, imbricated. *Petals*, four, large, white, emarginate, downy at the base. *Stamens* numerous, hypogynous. *Ovary*, oblong, one-celled. *Stigma*, round sessile, concave, entire. *Fruit*, oblong, knotty. *Seeds*, reniform, smooth.

Calyx four-parted. *Petals* four. *Torus* small. Stipes of the ovary slender. *Stamens* numerous. *Fruit* siliquose, somewhat bacoate, stipitate.

THE SPECIFIC CHARACTERS.

CAPPARIS SPINOSA. *Peduncle*, simple, one flowered, solitary. *Stipules*, spiny. *Leaves* roundish, obtuse, smooth. *Capsules* oval.

Stem trailing, smooth. *Leaves* ovate, quite smooth. *Flowers* auxillary, with slender peduncles much longer than the petioles.

THE ARTIFICIAL CHARACTERS.

CLASS POLYANDRIA. *Stamens*, twenty or more arising from the receptacle (hypogynous.) ORDER MONOGYNIA. Rocks, walls and cliffs, in the most southern parts of Europe, and in the Levant.

NATURAL HISTORY.

WE are happy in having it in our power to give a representation of the Caper shrub, whose blossoms are rarely seen in this country, though its flower buds are in very general use as a pickle, indeed, so great is their consumption that they form a very considerable article of commerce. It is a biennial plant growing wild in some parts of the United States and believed to have been introduced from Europe. It is sometimes found near

gardens and in cultivated fields, and is generally called *Mole Plant* under the impression that moles avoid the ground where it grows.

The plant grows spontaneously in the more southern parts of Europe, especially in Italy and the Levant; in its wild state it forms a shrub of low growth having numerous spreading spinous branches, somewhat thickly beset with smooth roundish leaves. The blossoms grow alternately on the branches, and when the plant begins to flower, one opens generally every other morning, but so delicate are its parts, that on a hot summer's day it fades before noon. The petals are white. The filaments which are extremely numerous, are white below and of a rich purple color above, in these the beauty of the flower chiefly consists, as in the pestillum does its great singularity. At first view, it would appear that the part so conspicuous in the center of the flower was the style terminated by the stigma in the usual way, but if this part of the flower is traced to a more advanced state, it will be seen that what was supposed the style, is merely an elongation of the flower-stalk, and what was supposed the stigma, is in reality the germen placed on it, crowned with a minute stigma, without any intervening style. This germen swells, turns downward, and ultimately becomes the seed vessel, rarely ripening in northern or cold climates.

The plant is with difficulty preserved by cultivation, for it delights to grow in crevices of rocks, and the joints of old walls and ruins, and always thrives best in a horizontal position. It flowers in May and June, and is usually raised from seeds.

A plant stood near a century against the wall of the garden of Camden House, Kensington, (near London,) it produced many flowers annually, though the young shoots were frequently killed to the stump during the Winter

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The dried bark of the root of CAPPARIS SPINOSA was formerly officinal. It is in pieces partially or wholly quilled, about one third of an inch in mean diameter, transversely wrinkled, grayish externally, whitish within, inodorous and of a bitterish, somewhat acrid and aromatic taste. It is considered diuretic and was formerly employed in obstructions of the liver and spleen, amenorrhœa and chronic rheumatism.

As a pickle, the flower buds of the CAPER SHRUB are in great

esteem throughout Europe. In Italy the unripe fruit is prepared in the same way as the flower buds; both are highly acrid and burning to the taste. In the isles of the Mediterranean and near Toulon, the flower-buds of the CAPER are gathered just before they begin to expand, which forms a daily occupation during six months, when the plants are in a flowering state. As the buds are gathered they are thrown into a cask among as much salt and vinegar as is sufficient to cover them, and as the supply of Capers is increased more vinegar is added. When the Caper season closes, the casks are emptied and the buds sorted according to their size and color, the smallest and greenest being reckoned the best, and put into small casks of fresh vinegar for commerce. They will in this state keep fit for use for five or six years. The best Capers are called Nonpareilles, and the second best Capucines.

CAPPARES SPENESA contains a milky juice which is extremely acrid, and the whole plant possesses the properties of a drastic purge; but the oil of the seed is the only part used in regular practice. This oil is colorless, inodorous and when recent nearly insipid, but it speedly becomes rancid, and acquires a dangerous acrimony. The oil may be extracted by expression, or by the agency of alcohol or of either. In the first case the bruised seeds are pressed in a canvas or linen bag, and the oil which escapes is purified by decanting it from the whitish flocculent matter which it deposits upon standing, and by subsequent filtration. By the latter process the bruised seeds are digested in alcohol or macerated in ether, and the oil is obtained by filtering and evaporating the solution.

This oil is a powerful purge, operating with much activity in a dose varying from five to ten drops. It was, some years since, much used by certain Italian and French Physicians who did not find it to produce inconvenient irritation of the stomach and bowels. Its want of taste and the smallness of the dose recommended it especially in the cases of infants. It was said to be less acrid and irritating than the Croton oil, over which it also had the advantage of greater cheapness. Some trials which have been made with it on this side of the Atlantic, have not tended to confirm these favorable reports. It was found uncertain in its cathartic effect, and very liable to vomit. (Scattergood, *Jour. of the Phil. Col. of Pharm.* IV. 124).

It may be given in pill with the crumb of bread, or in emulsion

Nº 95.

CORIANDRUM SATIVUM.

Coriander.

UMBELLIFERÆ.

Umbellifers.

No. 95.

CORIANDRUM SATIVUM.

CORIANDER.

Place—Europe.
Quality—Nauseous.
Power—Carminative, driving away milk.
Use—The seeds in hysterics, tertian ague.

BOTANICAL ANALYSIS.

Natural Order. Umbellatæ.—J. Umbelliferæ.—J.

CLASS V. *Pentandria.* ORDER *Digynia.*

Willd. *Sp. Pl.* 1448. Woodv. *Med. Bot.* 137. Smith, *Flor. Brit.* 320. Louden, *Ency. Pl.* 208. Lindl. *Flor. Med.* 58. U. S. *Dis.* 275. Per. *El. Mat. Med.* II. 508 Griff. *Mat. Med.* 341. Wood. C. B. 294.

GENUS. CORIANDRUM.

From the Greek κορις, a bug; on account of the smell of the leaves.
SYNONYMES.—Coriandre *F.*), Koriander Saamen (*G.*). Koriander (*Dutch, Swed. and Dan.*), Koriandor (*Pol.*), Coriandro (*Port.*), Coriandro (*I.*), Semilla de Clantro (*S.*), Cottamillie (*Tam.*), Mety (*Malay*), Kezereh (*Arab.*), Kitnuez (*Pers.*), D'hanya (*H.*), D'amyaca (*San.*)

THE ESSENTIAL CHARACTERS.

CALYX adhering to the ovary, entire or five-toothed.
COROLLA. *Petals*, five, usually inflected at the point, imbricate in æstivation.
STAMENS. Five, alternate with the petals and inserted with them upon the disk.
OVARY, inferior, two-celled surmounted by the fleshy disk, which bears the stamens and petals. *Styles*, two distinct, or united at their thickened bases. *Stigma*, simple.

FRUIT, dry, consisting of two coherent carpels, separating from each other by their faces (*commissure*,) into two halves (*merocarps*).

SEEDS. Concave, numerous.

THE SECONDARY CHARACTERS.

CORIANDRUM. *Calyx* with five conspicuous teeth. *Petals*, obcordate, inflected at the point, outer ones radiate, bifid. *Fruit*, globose. *Carpels*, whering with five depressed, primary ribs, and four secondary, more prominent ones. *Seeds* concave on the face.

Seeds, sub-spherical. *Germ* spherical. *Perianth* five-toothed. *Petals* cordate-inflexed, outer ones largest. *Involucre* one-leaved or wanting.

THE SPECIFIC CHARACTERS.

CORIANDRUM SATIVUM. *Leaves*, bipinnate, *lower ones* with broad cuneate leaflets, *upper* with linear ones. *Carpels* hemispherical.

Fruit globose. ***Calyx*** and ***style*** permanent.

THE ARTIFICIAL CHARACTERS.

CLASS, PENTANDRIA. *Stamens*, five, ORDER DIGYNIA. Polypetalous, *Seeds* two. *Flowers* in umbels. *Herbs* with hollow stems.

NATURAL HISTORY.

CORIANDER is mentioned by Moses (16 *Ex.* 31.) "And the house of Israel called the name thereof, Manna, and it was like Coriander Seed, white; and the taste of it was like wafers made with honey."

The plant is an annual, a native of Italy and the southern parts of Europe. It is occasionally found wild in some parts of the United States, but is cultivated in gardens owing to the abundant use of it for medicinal purposes. It delights in a sandy loam. It is raised from seeds which may be sown in February or March, when the weather is mild and dry; and the quantity requisite for a bed four feet wide by six in length, to be sown in rows, is half an ounce, and when sown in drills, they may be nine inches apart, and the seed buried half an inch. Where a con-

stant succession is required, small successive monthly sowings will be necessary in Spring and Summer, as the plants in those seasons soon run to seed. There should be also small sowings in the fall, to stand the Winter, under the defence of a frame. The plants are to remain where sown.

The stem is erect, about two feet in height, branching divaricated, round, smooth and obscurely striated. The leaves are compound, the lower ones pinnated, with gashed wedge-shaped, somewhat rounding leaflets and the upper thrice-ternate, with linear-pointed segments. Both the umbels and the umbellules are many rayed, with an involucre of one linear leaf and involucels of three lanceolate narrow leaves, all on one side. The flowers are of a white or reddish color. The calyx consists of five leaves. The Petals are five also, oblong and inflected at the tips, but those of the flowers of the circumference have the outermost petals larger and not inflected. The fruit commonly termed *coriander seeds* (*fructus seu semina coriandri*) is globular, about the size of white pepper, of a grayish yellow color, and is finely or obscurely ribbed. It consists of two hemispherical mericarps, adherent by their concave surfaces. Each mericarp has five primary ridges, which are depressed and wavy, and four secondary ridges more prominent and carinate. The channels are without vittæ, but the commissure has two. This form of the fruit distinguishes Coriandrum Sativum, *coriander*, from all the other species of Umbelliferæ.

The plant flowers in June, and ripens its seed in August.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

The dried seeds of the Coriandrum Sativum have a grateful, aromatic odor, and a moderately warm, pungent taste, qualities which depend on an essential oil, that can be obtained separate by the distillation of the seeds with water. Their active principles are completely extracted by alcohol, but only partially by water. This oil (*Oleum Coriandri*) is yellowish, smells strongly and pretty agreeably of the Coriander, and is the source of the odor, taste and medicinal properties of the fruit, which, like the other carminative umbelliferous fruits are aromatic and stimulant. The whole plant when green has an abominably fœtid odor if bruised, which extends even to the fruit. It is cultivated in private gardens chiefly for the tender leaves which are used in soups and salads. On a large scale it is cultivated for the seed.

which is extensively used by confectioners, druggists and distillers, in large quantities.

The seeds are sometimes used in flatulencies, but principally to cover the unpleasant taste, and correct the griping quality of some cathartics.

Dr. Cullen considered coriander as more powerfully correcting the odor and taste of Senna than any other aromatic; and hence it was formerly a constituent of the compound infusion of Senna, though now ginger is substituted for it. It is only employed in medicine as an adjuvant or corrigent. It is a constituent of the *confectio sennæ*, which when properly prepared is a mild and pleasant purgative, and well adapted for those who are afflicted with habitual costiveness.

CORIANDRUM SATIVUM is carminative, and therefore the following observations respecting medicines of that class are introduced for the use of the general reader. Carminatives are those medicines which usually dispel flatulency of the stomach and bowels by stimulating the inner coat of these organs. They in general produce only temporary relief, for if the diseased condition of the alimentary canal be not removed by appropriate remedies it will very speedily become again distended with flatus. The articles generally employed as carminatives are infusions or tinctures of the aromatic seeds and vegetables. The principal carminatives are ginger, cardamon, anise and caraway seeds; several of the essential oils, as those of peppermint, anise, coriander, and juniper. Ardent spirits and especially aromatic tinctures. The use of these articles is decidedly injurious in every instance in which the stomach or intestines are in the least degree inflamed, or when their sensibility is morbidly increased. They are however very favorite prescriptions with nurses and mothers, to allay the gripings with which young children are so frequently afflicted, and under these circumstances a great deal of mischief is caused by their indiscreet administration. Wholesome food, cleanliness of person, protection from cold and damp, and sufficient exercise will most generally prevent a flatulent state of the bowels of infants; when, however, it depends upon the disease of these parts carminatives will seldom do much good but will often increase the sufferings of the little patient.

N° 96.

COCCULUS PALMATUS.

The Colombo Plant. Columbo.

MENISPERMACEÆ.

Menispermads.

No 96.

COCCULUS PALMATUS.

COLUMBA PLANT. *Columbo.*

Place—Africa.
Quality—Bitter.
Power—Antisceptic, tonic.
Use—Indigestion, diarrhœa, fevers, cholera.

BOTANICAL ANALYSIS.

Natural Order. Sarmentaceæ.—L. Menispermaceæ.—J.

CLASS XXII. *Diœcia*. ORDER *Hexandria*.

Willd. Sp. Pl. 824. Woodv. *Med. Bot.* V. 21. Stephenson and Churchill 160. Loud. *Ency. Pl.* 844. U. S. *Dis.* 261. Griff. *Med. Bot.* 103. Per. *El. Mat. Med.* II. 733. Beach. *Fam. Ph.* 662. Kost. *Mat. Med.* 453. Wood, *Class Book*, 151. Lind. *Flor. Med.* 369. De Candolle. *Syst. Nat.* I. 515.

GENUS COCCULUS.

From *Coccus*, the name of the well known dyers' insect, and has been applied to this Genus on account of the resemblance which has been found to exist between that insect and the scarlet berries of the plant.

SYNONYMES.—Colombo [*F.*], Kolumbowurzel [*G.*], Columba [*I.*], Raizade Colombo [*Sp.*], Kalumbo [*Port.*], Kalumb [*Mozambique*], Columbo vaye. (*Tan.*]

THE ESSENTIAL CHARACTERS.

CALYX. *Sepals*, three-eight in a double series, two-four in each, imbricated in æstivation, hypogynous, deciduous.
COROLLA. *Petals*, one-eight, hypogynous, usually as many as the sepals, rarely wanting or none.

COCCULUS PALMATUS.

STAMENS distinct or monadelphous, equal in number to the Petals and opposite to them, or three or four times as many. *Anthers*, innate and consisting of four globose lobes.
OVARY, usually solitary, sometimes two-four
FRUIT, a drupe, globose-reniform.
SEEDS, lunate and compressed

THE SECONDARY CHARACTERS.

COCCULUS. *Flowers* unisexual, diœcious. *Calyx* of twelve sepals, in four series, with two three or more close pressed bracteoles. MALES. *Stamens* six, or rarely three opposite to the inner sepals, distinct. *Anthers* two-celled, terminal, dehising, vertically. *Filaments*, either filiform or thickened at the apex. FEMALES, *Ovaries*, three, six or numerous. *Drupes* one to six or numerous, one-celled, one-seeded. *Peduncles* axillary or rarely lateral.

Sepals and *Petals* ternate usually in two, rarely in three rows. *Stamens*. six distinct, opposite the petals. *Drupes* barried, one to six, generally oblique, reniform, somewhat compressed, one-seeded. *Cotyledons* distant.

THE SPECIFIC CHARACTERS.

COCCULUS PALMATUS *Flowers* small, green. *Calyx* of six petals in two series with bracteoles. *Petals* six obovate, half-enclosing the oppcsite stamens. *Anthers* terminal, two-celled. *Ovaries* three, united at the base. *Drupes* hairy.

Leaves cordate, five—seven lobed. *Lobes* entire, acuminate somewhat hairy on both sides. *Stem* and *Germ* with glandular hairs.

THE ARTIFICIAL CHARACTERS.

CLASS DIŒCIA. *Stamens* apart from the pistils in different flowers upon different plants. ORDER HEXANDRIA. *Herbs*, exogens, diœcious. *Fruit* a drupe. *Stamens* more than ten. *Leaves* peltate. Climbing suffruticose plant. *Racemes* axillary.

NATURAL HISTORY.

This plant is a native of the Mozambique, west of Africa. Cibo is mentioned as a locality of it. It there grows spontaneusly, and is not cultivated by the natives. The manner of preparing the root is to remove it from the earth during the dry season, which is in March, and after washing it to cut it into pieces, usually horizontal, and then dry them in the shade. The

offsets are selected in preference. The pieces are marked by a thick ring on the outside, corresponding to the dense vertical substance, contrasting with the contracted interior, which is formed of more spongy parenchyma. The surface is marked by concentric rings.

Redi, in 1677, first mentioned the properties of the root of the COLUMBA. It was not however introduced into Europe for a long time after, and then little was known of its origin. Commerson, in 1770, procured some specimens from the garden of Mr. Poivre, of the Isle of France, and sent them to Europe. From these Lamarik has given his description of the plant, under the name of *Menispermum palmatum.* Mr. Ferton. a resident of Madras, obtained a living specimen of the plant in 1805, and Mr. Berry in the *Asiatic Researches* figured and described it. In 1830 Sir Wm. J. Hooker published a complete description both of the male and female plants in the *Botanic Magazine.* This was made from the drawings sent to England by Mr. Telfair of Mauritius who obtained living roots from Captain Owen, procured by him when on the survey of the eastern coast of Africa. From the name Colombo root it was supposed to be the product of Ceylon, but this is not the case as has been stated by Shurrberg and Dr. Rajuct. The name by which it is known in India is *Kalumb. Columba* is brought into the market in bales, and sometimes in cases, and as it constitutes an article of traffic in the East it may be bought in most of the great marts of that portion of the world. Usually Bombay, Madras or Calcutta, are the indirect sources of it. The pieces are frequently much perforated evidently by worms and not as has been supposed by stringing to facilitate its drying. Those pieces which have the fewest worm-holes, the brightest color, and are solid and heavy, are the best. It is said that the root of white bryony, tinged yellow with the tincture of columba has been fradulently substituted for this root.

CHEMICAL AND MEDICAL PROPERTIES AND USES.

COLUMBA root has a very slight aromatic odor and a bitter taste It breaks with a starchy fracture and is easily pulverized. Water at 212° takes up one-third of its weight, and the infusion has all the sensible qualities of the root. These are also extracted by alcohol, but proof spirit is the best menstruum. The infusion is not altered by solutions of sulphate of iron, nitrate of silver,

muriate of mercury, and tartarized antimony, but a copious precipitate is produced by the infusion of galls, and yellow cinchona bark, by asctate and superacetate of lead, oxymuriate of mercury and lime-water. Hence Columba root was erroneously supposed to contain cinchonia. M. Planche found it to contain a large proportion of a peculiar animal substance; a yellow, bitter, resinous matter, and one-third of its weight of starch. By repeated distillation, he also obtained a volatile oil, and from the residue malate of lime, and sulphate of lime. By treating columba root with alcohol of 0.835, then reducing the tincture by distillation to one-third, allowing the residue to stand until crystals form in it, and afterwards purifying these, Mr. Wittstock of Berlin procured a new salt, to which he gave the name of *columbina*, and which he supposes to be the active principle of columba root. It is inodorous, extremely bitter, neither acid nor alkaline, and scarcely soluble in water or in alcohol. The acetic acid is its proper menstruum.

Columba root is a useful antisceptic and tonic. It is frequently employed with much advantage in diarrhœas arising from a redundant secretion of bile and in bilious remittent fever, and cholera, in which it generally checks the vomiting. It also allays the nausea and vomiting which accompany pregnancy, and according to Percival, it is equally servicable in stopping the severe diarrhœa and vomiting which sometimes attend dentition. Denman found it more useful than cinchona in the low stage of puerperal fever. As a tonic, unaccompanied with astringency, and possessing little stimulus, it has been recommended in phthisis and hectic fever, to allay irritability and strengthen the digestive organs, and in dyspepsia. It may be given combined with aromatics, orange-peel, opiates and alkaline or neutral salts as circumstances may indicate or require. The powder in combination wiih rhubarb and sulphate of potassa is found exceedingly serviceable in mesenteric fever. An ointment made with the powder has been used in tinea capitis, and to destroy vermin in the hair. Rubbed up with lard in the proportion of ten grains to the ounce, it usually cures tinea capitis in less than a month

It is given in powder, or in infusion or tincture. When boiled in water the starch is dissolved, and a turbid thick solution is produced, a decoction is therefore objectionable. The dose of the powdered root is from fifteen grains to half a drachm, repeated three or four times a day.

PROSPECTUS

OF

GOOD'S FAMILY FLORA

AND

MATERIA MEDICA BOTANICA.

A PERIODICAL.

Twelve Numbers form a Part, published Quarterly, in January, March, June, September, and December of each year, and these Parts form a Volume. Subscription, Three Dollars per annum, in advance.

The first volume and several parts also of the second volume of the Family Flora being now published, the public, as well as the profession, are, we trust, in possession of sufficient materials to form a judgment of the character of the whole. We cannot but feel exceedingly flattered by the expression of praise that has been bestowed upon the work by those who are the most competent to form an opinion on the subject. The approval of the press has also been highly gratifying.

The following plan has been adopted in describing the plants illustrated in this work.

The botanic name of each plant, in large capitals, appears first; then the common or vulgar name in italics; next follows its place or habitation, and some of its most prominent qualities, in smaller type, and after, a very short epitome of its power and application. The whole of this division is intended to be terse and concise, exhibiting an appropriate head to the body of the matter.

The botanical description of each plant embraces those characteristics (essential and secondary as well as specific characters) which botanists have fixed on as the only means by which a plant, that is not familiar to the reader of an account of it, can, with certainty, be known; and these descriptions are given in the language employed by modern botanical writers. This method of discovering a plant by comparisons derived from a few particulars, and these of the most striking kind, is certainly an agreeable and noble exercise of the understanding.

The Natural History of each plant introduced in this publication embraces only a general and familiar account of whatever does not properly come under the botanical analysis; and as this division of the subject is more particularly calculated for the general reader, it is hoped, with the colored engravings, there will be no difficulty in identifying the several plants described. This study of plants possesses one very eminent advantage; it doubles the pleasure of every walk and journey, and calls forth to healthy exercise the bodily as well as mental powers.

For the chemical and medical department recourse has been had to every work of reputation to which access could be obtained; and as much useful information regarding each of the plants treated of has been brought together as could be conveniently crowded into a small space. We are often placed in situations in which it may be highly important to be able to recognize the vegetable which yields a particular medicine, and we are so constantly liable to imposition from the collectors of herbs, that the necessity of possessing the means of distinguishing by infallible marks the various vegetable products of the earth will be readily recognized.

The extreme difficulty and great expense of executing the colored plates, at once in an accurate and elegant style, can only be appreciated by those who have actually attempted something of the same kind. It is gratifying, however, to find that the general execution of the work has met with the public approbation, — a fact of which the favorable notices of the press and the large subscription list afford ample evidence. It is also encouraging to learn that the Family Flora has already been adopted as a text-book in many of our most respectable seminaries of education; and in noticing this fact, it may be proper to remark that the student who may so use this work will find his labors greatly facilitated by using, in connection with it, the excellent "Class-Book of Botany," by Alphonso Wood, A. M., a new edition of which has recently been published.

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